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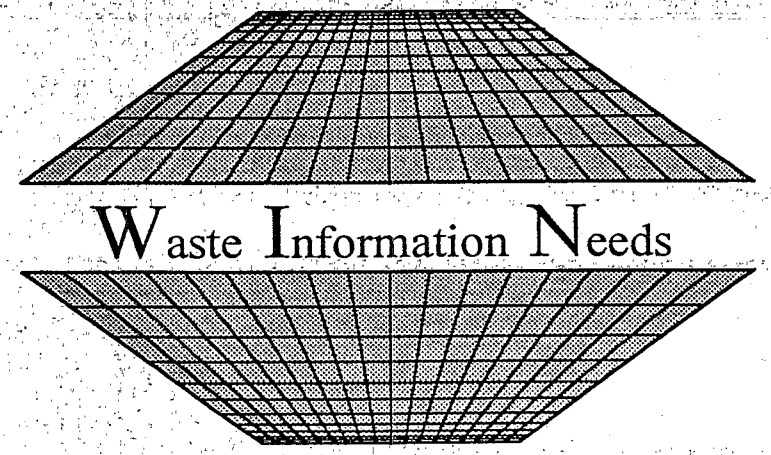
The Hazardous Waste Program Information Strategy Plan



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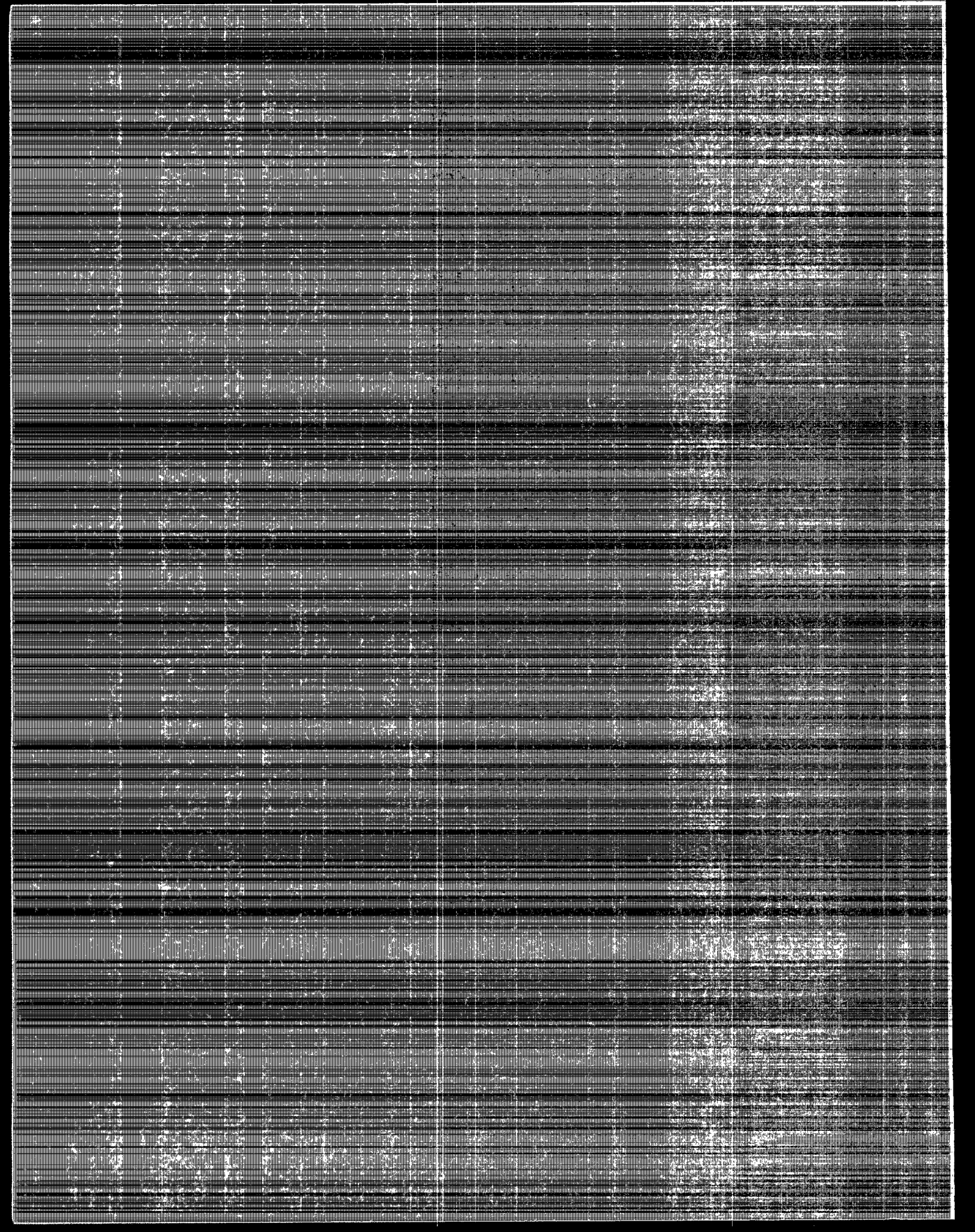

TABLE OF CONTENTS

EXECUTIVE SUMMARY ES-1

1.0 INTRODUCTION 1-1
1.1 BACKGROUND 1-1
1.2 DISCUSSION 1-2
1.3 ORGANIZATION OF THE REPORT 1-4

2.0 THE EPA HAZARDOUS WASTE PROGRAM ASSESSMENT 2-1
2.1 KEY QUESTIONS 2-1
2.2 KEY FINDINGS 2-1
2.2.1 Organization 2-1
2.2.2 Program Direction 2-2
2.2.3 Information Management Direction 2-2
2.3 DISCUSSION 2-3
2.3.1 EPA Hazardous Waste Program Organizations and Functions 2-5
2.3.2 Senior Management View of the EPA Hazardous Waste Program . 2-5
2.3.3 Strategies of the EPA Hazardous Waste Program 2-12

3.0 IDENTIFICATION OF EPA HAZARDOUS WASTE PROGRAM AREAS AND INFORMATION NEEDS 3-1
3.1 KEY QUESTIONS 3-1
3.2 KEY FINDINGS 3-1
3.3 DISCUSSION 3-2
3.3.1 Key Program Activities 3-3
3.3.2 High Level Categories of Information Needs 3-5
3.3.3 Identification of Program Areas 3-8

4.0 EPA HAZARDOUS WASTE PROGRAM CURRENT SYSTEMS ASSESSMENT 4-1
4.1 KEY QUESTIONS 4-1
4.2 KEY FINDINGS 4-1
4.3 DISCUSSION 4-2
4.4 CURRENT SOURCES OF INFORMATION 4-4

CONTENTS (continued)

5.0 POTENTIAL TECHNOLOGIES AND EVALUATION CONSIDERATIONS . . 5-1
5.1 KEY QUESTIONS 5-1
5.2 KEY FINDINGS 5-1
5.3 DISCUSSION 5-2
5.3.1 Potential Technologies 5-2
5.3.2 Evaluation Considerations 5-7

6.0 PROGRAM AREA PRIORITIZATION AND RECOMMENDATIONS 6-1
6.1 KEY QUESTIONS 6-1
6.2 KEY FINDINGS 6-2
6.3 DISCUSSION 6-2
6.3.1 Overview of the Program Area Prioritization Based on Strategic Importance and Level of Current Systems Support 6-3
6.3.2 Detailed Analyses of Priority Determinations for the Seven Program Areas 6-5
6.3.3 Evaluation of Program Areas and Identification of Short-Term Projects in Light of Internal and External Factors Influencing the RCRA Program 6-17

7.0 TRANSITION PLAN 7-1
7.1 KEY QUESTIONS 7-1
7.2 KEY FINDINGS 7-2
7.3 DISCUSSION 7-3
7.3.1 Implementation Process 7-3
7.3.2 PAA Methodology 7-6
7.3.3 Proposed Projects 7-8
7.3.4 Issues to be Addressed by EPA and States 7-14

EXHIBITS

Exhibit 2-1. Five Steps in EPA's Hazardous Waste Program Assessment 2-4
Exhibit 2-2. Roles of Divisions within the Office of Solid 2-6
Exhibit 2-3. Roles of the Offices within the Office of Enforcement and Compliance Assurance 2-7
Exhibit 2-4. RCRA-Related Roles within EPA Regional Offices (e.g., Hazardous Waste Divisions 2-8
Exhibit 2-5. Coordination between GPRA and RCRA Strategic Planning 2-9

EXHIBITS (continued)

Exhibit 2-6. EPA Program Goals and Strategies as Identified by Program Management and Staff in 1995 Facilitated Sessions for the Purposes of Identifying Information Needs 2-13
Exhibit 3-1. Key Activities and Sub-Activities of the EPA Hazardous Waste Program Used to Identify Program Areas 3-4
Exhibit 3-2. Overview of the EPA Hazardous Waste Program Strategic Information Needs Grouped into Eight High-Level Categories (numbers represent sub-category denominations used in this assessment) 3-6
Exhibit 3-3. Overview of the EPA Hazardous Waste Program Areas 3-10
Exhibit 4-1. Overview of Current Systems Used to Support the EPA Hazardous Waste Program 4-6
Exhibit 4-2. Some Sources for RCRIS and BRS Data 4-14
Exhibit 6-1. Prioritization of the EPA Hazardous Waste Program Areas 6-4
Exhibit 6-2. Overview of External and Internal Influences Affecting Information Management 6-19
Exhibit 6-3. List of Short-Term Projects to Support the EPA Hazardous Waste Program 6-22
Exhibit 7-1. Preliminary Estimates of Resources, Schedule, and Outputs/Outcomes of Recommended PAAs 7-11
Exhibit 7-2. Preliminary Estimates of Resources, Schedule, and Outputs/Outcomes of Recommended Short-term Projects 7-13

APPENDICES

APPENDIX A - OSW Strategic Plan
APPENDIX B - Description of the Information Engineering Methodology (IEM)
APPENDIX C - List of Executive Interviewees
APPENDIX D - WIN & Agency Initiatives
APPENDIX E - Attendees List for September 1995 Meeting
APPENDIX F - RCRA Program Goals and Strategies
APPENDIX G - Information Needs Descriptions
APPENDIX H - Description of the IEM Process Used to Identify Program Areas for the EPA Hazardous Waste Program
APPENDIX I - Curent Systems Assessment Analysis
APPENDIX J - Description of the EPA Hazardous Waste Program Area Prioritization
APPENDIX K - Briefing on the RCRIS Lessons Learned Project

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EXECUTIVE SUMMARY

Reinvention of information management in the Environmental Protection Agency (EPA) hazardous waste program began in 1994, when the Office of Solid Waste (OSW) revised its strategic plan, and identified a series of information management objectives as part of its Five-Year Strategy. The Waste Information Needs (WIN) initiative evolved from that process. This initiative is an effort to reassess the information universe and the data quality needs of EPA, states and tribes, and public and private sector customers involved with hazardous waste management under the Resource Conservation and Recovery Act (RCRA). WIN also seeks to provide improved access to hazardous waste information, to reduce the burden of data providers, and to match information technologies to the identified data and access needs.

Objectives of the WIN Initiative

- Reassess the information and data quality needs of all stakeholders in the RCRA hazardous waste program
- Provide improved access to required information
- Reduce the burden of data generation and collection
- Identify the appropriate information technologies to provide more useful and accessible data to all users.

A WIN steering committee consisting of representatives from EPA headquarters, regions (Regions 3, 9 and 10), and states (Oregon, Nevada, and New York) was formed to oversee the WIN effort. The committee decided to pursue separate but parallel tracks in conducting the first phase of the WIN project -- an Information Strategy Plan (ISP). To ensure comparable results, a common methodology, the Information Engineering Methodology (IEM), was chosen. IEM is a top down approach to information systems development that has four phases: 1) planning (preparation of an ISP); 2) analysis; 3) design; and 4) construction.

This ISP was prepared to provide the EPA hazardous waste program with a vision of the strategic information needed to support the program over the long term. It also provides a plan that outlines analyses and projects designed to meet the objectives of the WIN initiative. The ISP discusses the evolving program directions and documents the supporting activities that EPA management and staff expect to perform as part of the EPA hazardous waste program in the future (Program Assessment). It identifies the information needs deemed essential to carry out these activities effectively (Information Needs Assessment), and assesses the reliability and accessibility of the automated and non-automated systems and tools that currently supply information to the program (Current Systems Assessment). The ISP also lists potential technologies, along with guidelines and assessment criteria for selecting technologies for the future (Technology Assessment). Finally, it discusses findings and recommendations and includes EPA's transition (or implementation) plan, which identifies issues to be resolved and possible mechanisms for proceeding with the next phase.

This report presents EPA's ISP. The states have already developed an ISP under their parallel effort, Information Needs for Managing Environmental Decisions (INFORMED). Prior to initiating the next analysis phase of the project, states and EPA will meet to discuss the results of the planning phase and to develop a framework for proceeding. The EPA and state ISPs provide a roadmap to the analysis that will lead to improvements in current systems or the construction of new ones. These ISPs, however, do not signal the immediate phase out of current systems that support the RCRA program. As the WIN and INFORMED processes evolve and these strategic plans are implemented, EPA will continue to maintain and support current systems until any new or redesigned system(s) are in place.

STRATEGIC VISION ON RCRA PROGRAM AND ITS INFORMATION NEEDS

Key findings of the program and Information Needs Assessments of this ISP are given below.

EPA's role is changing with regard to the regulated community. Traditional command and control approaches to setting standards and achieving environmental protection are being replaced and/or supplemented by more flexible approaches, including voluntary actions and compliance assistance, that focus on the end result.

EPA's role is changing with regard to its co-implementors. As the hazardous waste program continues to mature, EPA's role is evolving from one that emphasizes program development and direct implementation toward one that focuses on evaluation and assistance to the states and tribes, who are co-regulators of the RCRA program. EPA must also ensure greater access to program information, including regulatory interpretations, proposed rulemakings, and guidance documents to states and tribes to ensure consistent implementation of the hazardous waste program across the nation. As states and tribes exercise more flexibility to set priorities based on their unique environmental issues, EPA needs to develop new measures of program progress that reflect this situation.

EPA should place less emphasis on tracking program activities and more emphasis on developing effective means of measuring program success based on actual environmental results and stakeholder needs. Historically, EPA has evaluated program performance primarily by tracking individual program implementation activities. With movement away from command and control approaches and toward greater flexibility for states to pursue priority environmental issues, better measures are needed to assess the actual environmental results (outcomes) of different ways of managing the nation's hazardous waste. The increased emphasis on compliance assistance also requires that EPA develop tools and mechanisms for determining stakeholder needs, and establish ways to measure the effectiveness of different compliance assistance tools in meeting those needs.

Hazardous waste program information should be readily available to analysts and the public at large, less resource intensive to maintain, and of higher quality. Information should be easily accessible for program staff and managers and readily available to the public to promote local stakeholder participation in environmental decision-making.

EPA hazardous waste information should be integrated with other EPA and outside information systems. The EPA hazardous waste program has a rapidly increasing need to be able to integrate its information systems with others in order to support multi-media activities, risk analyses, Agency reinvention and regulatory reform initiatives, and other targeting and prioritization efforts. This is particularly true in the area of risk analyses, as EPA incorporates more risk-based decision making into all program development and implementation activities, as well as management/budget decisions.

More emphasis is needed on reducing unnecessary burdens on those who must provide hazardous waste information. As EPA seeks ways to reduce the hazardous waste reporting burden and devolve the hazardous waste program increasingly to the states and tribes, EPA needs to identify the fundamental (core) data required to support the EPA hazardous waste program. EPA needs to also continue to reinvent and streamline the existing program to make it simpler and less burdensome for facilities to show compliance with environmental regulations.

The EPA hazardous waste program information needs should drive the development of any future information systems. EPA's prior experience (particularly with regard to RCRIS [Resource Conservation and Recovery Information System] Lessons Learned project) has shown that programmatic definitions should be developed and agreed upon up front by the program personnel (EPA, states, tribes), and these should be the elements around which information systems are developed.

The EPA hazardous waste program has numerous information needs, and they do not appear to be decreasing. The need for information ranges from facility-specific to program-wide information covering stakeholders, program planning, information systems, and policy and regulatory documents. New requirements, such as the Government Performance and Results Act (GPRA), create additional information needs as well. EPA personnel observe a significant tension between the overall program goal of achieving burden reduction and a continuing need, at the implementation level, for detailed, site-specific information. One of the major challenges the program faces is defining a set of core information needs that reduce the current reporting burden on all stakeholders, yet provide adequate information to allow effective management and evaluation of the progress of the program on a national level.

EPA PROGRAM AREAS

A Program Area represents a set of highly-related activities that create and share a common set of information. Dividing the EPA hazardous waste program into a series of Program Areas allows future analysis to proceed in an efficient and ordered sequence. After the Program Areas were identified, they were prioritized for future actions.

The hazardous waste program is comprised of seven major Program Areas: *Program Implementation, Program Evaluation, Information Sharing, Program Development, Program Management, Studies and Research,* and *Program Implementation Support.*

EPA's recommended top three Program Area priorities are Program Implementation, followed by Program Evaluation and Information Sharing (tied). The seven Program Areas were ranked based on both their strategic importance to EPA's hazardous waste program, and the extent to which improved information and/or sources to support the particular Program Area are needed. In addition, the seven areas were reviewed against specific factors external to OSW that impact priority setting. These external factors include: 1) broad Agency initiatives (such as the Common Sense Initiative and the 25% Burden Reduction Initiative), 2) projects/initiatives of other program offices which affect RCRA and/or WIN, and 3) General Accounting Office (GAO) and Office of Inspector General (OIG) audits/evaluations. Previous OSW projects and decisions (i.e., RCRIS lessons learned and changes to the 1997 biennial report) have also created expectations and, therefore, impact priority setting. The results were that *Program Implementation, Program Evaluation* and *Information Sharing* were the three highest priorities.

Significant overlap exists between EPA's priority Program Areas and the states ranking in their own ISP. After developing its own priority ranking of Program Areas, EPA compared the results with the state ISP. Although the identified Program Areas were not identical, and scope and terminology differed, there was significant overlap. This provides a basis for continued, coordinated efforts with the states and tribes.

CURRENT SYSTEMS ASSESSMENT

The key findings are:

There are more than 50 major information sources (automated and nonautomated) for RCRA information. Many of these systems are currently available to program staff via the Agency's mainframe, the Agency's value added backbone services (VABS), or the Internet (see Exhibit 4-2). The sources most frequently used are Biennial Reporting System (BRS), Code of Federal Regulations (CFR), Industry Studies Database (ISDB), Integrated Database

for Enforcement Actions (IDEA), Resource Conservation and Recovery Information System (RCRIS), and the Beginning of Year Plan (BYP). These six information sources provided an information baseline for the EPA hazardous waste program.

National systems (Toxic Release Inventory [TRI], Facility Index System [FINDS], RCRIS, BRS, Integrated Data for Enforcement Analysis System [IDEA], Comprehensive Environmental Response, Compensation and Liability Information System [CERCLIS]) received the lowest confidence levels because these mainframe systems are considered to be medium in reliability and low in accessibility. While program staff frequently access these systems, and acknowledge that these sources contain a wealth of information on facility, wastes, and program activities, they rated the reliability of information as medium. They note that the information is not as current as needed, and that it does not provide the flexibility needed to support multi-media and risk analyses. Information sources such as RCRIS and BRS, which are maintained within the EPA hazardous waste program, are difficult to access because they are on the mainframe and programmed in a software language (FOCUS) that is difficult to use. Other sources that are maintained outside the EPA hazardous waste program are not readily accessible to staff. Data consistency and reliability issues should be continuously addressed when information is collected from diverse suppliers.

Nearly half of the information sources used are maintained by organizations external to EPA/RCRA programs (e.g., CERCLIS). Other organizations within EPA that are responsible for the information sources identified include the Office of Emergency and Remedial Response (OERR), the Office of Research and Development (ORD), the Office of Prevention, Pesticides and Toxic Substances (OPPTS), and the Office of Information and Resources Management (OIRM). The need to access and integrate external information sources will become increasingly important as program staffs strive towards the vision of an integrated environmental approach.

Significant reliance on textual information indicates that strategic information management needs cannot be met solely through automated data base applications. Headquarters and regional program staff often use sources that contain textual information on Agency regulations, policies, guidance, studies, and decisions. This type of information is typically organized in repositories that are hard copy or electronic. If the repository information is in hard copy, it may be found in an organizational library or on a staff member's desk. If the repository information is electronic, it may be located on the Internet to widen its availability or located on a local area network (LAN) server to make information available to internal organizational staff.

TECHNOLOGY ASSESSMENT

The ISP lists potential technologies to be considered and proposes evaluation criteria to be used in making future decisions on information technologies to support the hazardous waste program.

The key findings are given below.

EPA needs to seek stakeholder involvement prior to making recommendations on any specific information technology (or technologies) for the hazardous waste program. Input on potential technologies and likely applications needs to be solicited from hazardous waste program stakeholders. It is also essential that EPA, states, and tribes resolve certain programmatic issues (e.g., co-regulation roles) prior to any selection of specific technologies.

Future technologies should be able to accommodate and focus the broad range of technology and information requirements of the hazardous waste program stakeholders, be user friendly, and support broad sharing and accessibility of information. Given the wide range of information needs and the diversity of skills across the stakeholder universe, any national approach to information management for the hazardous waste program needs to provide a variety of automated information collection methods, and access tools. Users must be able to access the information they need and have it organized and presented in a manner that is meaningful and useful to them.

To effectively support new program directions, new technologies need to facilitate the integration of information from many sources. New program directions focus on solutions that consider the place (community-based programs/projects), multi-media impacts, a particular industrial sector, and measurable environmental results. Technologies, therefore, should easily support linking and combining hazardous waste information with information from other sources that describe other environmental media, population demographics, and industry demographics.

Any technologies considered for a national hazardous waste program information system must be evaluated against a set of criteria that reflects user requirements. EPA has developed a set of criteria (user requirements) to be used in evaluating technologies. The criteria are reliability, accessibility, cost, flexibility, portability, useability, infrastructure compatibility, telecommunications requirements, processing requirements, system security, electronic media information access, scalability, and historical record keeping ability.

TRANSITION (OR IMPLEMENTATION) PLAN

EPA has developed a proposal for the next analysis phase of the WIN process. This transition plan includes recommendations for actions over the next 2-3 years, and proposes guidelines and key principles for interaction with states (and tribes where feasible) in carrying out the next phase of the project. The following paragraphs present the key findings.

The priority Program Areas–Program Implementation, Program Evaluation, and Information Sharing–are proposed for action, and possible completion, over the next two to three years. Since it is not possible to address all of EPA's short- and long-term information management needs in the next two or three fiscal years, priorities must be set. The Transition Plan recommends that the top three priority Program Areas be targeted for action.

EPA has identified several important short-term projects for action in FY 1997. Rather than focus all of its available information management resources on Program Area Analyses (PAAs), EPA believes it is important to capitalize on some of the short-term projects underway or about to begin, and to realize some short-term successes. The priority short-term projects EPA will pursue in FY 1997 are implementing the 1997 Biennial Report changes to support burden reduction, developing a searchable database of policy and guidance documents on the Internet for easier public access, streamlining the RCRIS national oversight data base, developing a copy of the national oversight systems for RCRIS and BRS in Oracle to provide for increased data sharing and integration across the agency, and conducting a feasibility study on a docket indexing system that supports EPA's desire to make all docket systems compatible. Each of these short-term projects supports one of the top three priority Program Areas, or is needed to fulfill an agency mandate.

Each PAA and short-term project should address certain key principles. These principles, based on past experience and future program directions, are fundamental to the success of any future national information management initiative. They are 1) identification of core (truly essential) information needs to reduce burden, 2) development of consistent definitions, 3) establishment of an agreed upon partnership framework (including resolution of co-regulation issues), 4) provision for increased accessibility to information by all industry sectors, EPA staff, states, tribes, stakeholders, and 5) support for a multi-media focus (ability to integrate systems).

EPA, states, and, if possible, tribes need to agree on a framework for interaction early in the transition process. Prior to initiating the next phase of the process, the PAA, EPA, states and tribes (as feasible) will meet to determine the specific next steps and to identify roles and responsibilities associated with carrying out those steps. The transition plan discusses the need

to agree on a framework for interaction early in the implementation process. The framework should address a methodology for conducting the PAAs to ensure consistency across PAAs, a process for developing and reaching agreement on work plans with tasks and deadlines, and mechanisms for resolving issues that arise during the process.

Continued success for the WIN initiative requires a long-term resource commitment. To implement the findings of the ISP, the transition plan reflects the Agency's attempt to strike the optimum balance between resource and time constraints versus the necessity for meaningful progress on critical long-term and short-term projects relevant to EPA's information management systems. The Agency estimates that the WIN initiative will take several years to complete. This estimate includes the completion of several activities. First, the highest priority Program Areas must undergo a detailed five-step analysis comprising the following tasks: scoping a PAA, activity analysis, data analysis, interaction analysis, and confirmation. Second, the remaining Program Areas must be reviewed. Additionally, there are a number of short-term projects underway or scheduled to be initiated in the near future that will support the purpose and goals of the WIN initiative.

EPA and the states must make a long-term commitment to the WIN initiative and provide the necessary resources to effectively implement this effort. The commitment must include not only the identification and acquisition of the next generation of information systems that emerge from the WIN and INFORM initiatives, but also ongoing support to those systems after they become operational. It is also essential to continue supporting existing information systems during the transition, with an eye toward where the next generation of information systems are headed.

1.0 INTRODUCTION

This report, which is a strategic planning document for information management, is the first step of a four-stage process that the Resource Conservation and Recovery Act (RCRA) program is undertaking to systematically identify RCRA hazardous waste information needs and develop and implement approaches to meet those needs.

The Office of Solid Waste (OSW) believes this project is vital to ensuring that needed information is available for the Environmental Protection Agency (EPA) to efficiently and effectively develop and implement a RCRA program evaluation; offer program support, technical support, and state assistance; and review existing and develop new regulations and guidance. OSW further believes that meeting RCRA program information needs will ensure an integrated and effective hazardous waste management program in the United States. Without a systematic review of RCRA information needs and an integrated approach to developing new information management systems, EPA will not be successful in transitioning from current, burdensome mainframe based systems to future systems that provide better accessibility and key information to meet the changing requirements of the RCRA community.

1.1 BACKGROUND

It has been almost 2 decades since the EPA embarked upon a comprehensive national program for hazardous waste management known as Subtitle C of RCRA. During this time, the RCRA program has achieved a number of successes, including the establishment of a nationwide cradle-to-grave system of hazardous waste management. In addition, both the public and private sectors have expended substantial efforts to reduce hazardous waste generation, recycle or treat hazardous wastes prior to disposal, ensure proper disposal, and take corrective actions where necessary to clean up old contaminants.

From the outset the RCRA program has featured a significant role for the states, delegating implementation authority to the states over time. By the mid-1990's, the program has become much more of a state-delegated program, which has involved changes in emphasis on the respective roles and responsibilities of EPA, the states, and more recently, tribal authorities. The OSW has endorsed this evolving direction and, through its five-year Strategy, is committed to changing its operations to further this direction in program management.

The vision statement from the OSW Strategy (see Appendix A) indicates EPA's intent:

> *To move from a primarily command and control program and from the role of direct implementor to a more flexible, innovative, and delegated program. Through assistance and dissemination of information, [EPA will] leverage the resources of others to implement the program.*

The OSW Strategy provides the following objectives for the management of information, which is a key factor in the vision statement:

- *The states, tribes, and EPA mutually agree to the core data elements needed to support the National RCRA program. Using these elements as a template, the states and tribes identify other elements to assist them in managing their programs.*

- *EPA maintains a database to support national-level information needs; the states and tribes maintain their own RCRA data systems that feed into the national system.*

- *EPA develops a national-level RCRA information system consistent with the Agency's integrated information management system.*

- *EPA effectively integrates data management into regulatory development and implementation.*

- *EPA significantly reduces the overall RCRA record keeping and reporting burden.*

- *EPA develops and utilizes a much better understanding of the real risks (human health and ecological), and significantly improves its ability to measure and communicate information about those risks.*

- *EPA redefines RCRA success measures to focus on outcomes.*

The Waste Information Needs (WIN) initiative evolved from the objectives of the OSW Strategy. This initiative is an effort to reassess the RCRA information universe and the data quality needs of states and tribes, EPA, and public and private sector customers. The WIN initiative is also an attempt to improve access to hazardous waste data and reduce the burden of data providers. Finally, the WIN effort seeks to match its information technologies to the identified data and access needs.

1.2 DISCUSSION

In developing the WIN project, EPA established a steering committee of headquarters, regional (3, 9, and 10), and state (New York, Nevada, Oregon) representatives. The first task for the steering committee was to determine the scope of the WIN project and the method by which the states and EPA would reassess information needs.

The steering committee decided that because the hazardous waste program and the municipal program are fundamentally different, WIN would initially focus solely on hazardous waste management. The committee also felt that it would take a concerted and comprehensive effort to work out the complex information needs and relationships of just the hazardous waste information stakeholders.

During several planning meetings in April and May 1995, the states and EPA discussed changes in their respective roles and information needs in implementing the hazardous waste program. Through these discussions, the states and EPA decided to conduct two separate but parallel efforts to determine state, tribal, and EPA information needs.

> [**NOTE:** Because the role of tribes in implementing RCRA programs is still in its early stages of development, the state experience is, at this point, being used to suggest by analogy future tribal needs. We anticipate that direct input from the tribes will be forthcoming in response to this Information Strategy Plan and in the implementation phase of the program. To the extent that tribes are in a position to participate directly, EPA welcomes such participation.]

The steering committee determined that it would oversee these two efforts. The committee also agreed that there would be a common approach (i.e., the Information Engineering Methodology - IEM) used by both the states and EPA in determining the information needs. The IEM is a top-down approach to information systems development consisting of four phases: 1) planning (preparation of an ISP), 2) analysis, 3) design, and 4) construction. The steering committee will meet in November 1996 to determine the next steps after the two ISPs are completed by EPA and the states. The body of this report does not describe the details of the approach used to conduct this ISP or the method used to analyze and prepare the results. This information is described in detail in the appendices. Appendix B provides a detailed description of the overall IEM approach, including the development of this ISP and the follow-on phases. Appendix H focuses on the key analytical steps of the IEM approach used to perform this ISP.

This document is the Information Strategy Plan (ISP) for the EPA hazardous waste program, and it identifies the following:

- Expected goals and activities of the EPA hazardous waste program.
- Strategic information needs for supporting the EPA hazardous waste program.
- Major Program Areas for analysis (groupings of program functions and their information support requirements).
- Current sources used to acquire information and the reliability and accessibility of the information.
- Possible technology strategies to be considered in the future collection, integration, and dissemination of information.
- An analysis of the above information to establish information priorities for the hazardous waste program for EPA.

- An implementation plan to carry out the major findings in this ISP.

The document does not identify activities or data elements, particularly the following, at a detailed or comprehensive level:

- Specific activities of the hazardous waste program.
- Specific data elements or their data quality requirements.
- Data element sources.
- Specific technology solutions.
- Every information-related activity needed to support the hazardous waste program.

The next phase of the overall WIN effort, Program Area Analysis (PAA), will address these specifics, including data quality and access requirements. This EPA ISP will be used in conjunction with the state ISP (INFORMED - Information for Making Environmental Decisions) to determine the next steps that the states and EPA will be taking together (and separately) in pursuing a coordinated set of priorities. By coordinating the two ISPs and future planning, both EPA and the states can ensure the best use of resources in managing RCRA hazardous waste information needs for all interested parties, including members of the general public.

1.3 ORGANIZATION OF THE REPORT

The remainder of this report, which provides the results of the EPA hazardous waste program ISP, is organized into six chapters. The contents of each chapter are described below, along with key questions answered in the chapter:

- **Chapter 2.0, The EPA Hazardous Waste Program Assessment,** identifies the EPA offices and divisions currently involved in managing, evaluating, and directing the national hazardous waste program and addresses the implications of their respective activities and overall visions for information management. This chapter addresses the following questions:
  - *Which EPA organizations primarily support the hazardous waste program?*
  - *What are management's views from the EPA organizations supporting the hazardous waste program?*

- *What are the key strategies of EPA management and staff to implement the hazardous waste program?*

- **Chapter 3.0, Identification of EPA Hazardous Waste Program Areas and Information Needs,** describes the information needs and activities to support the current and anticipated future direction of EPA's hazardous waste program. This chapter addresses the following questions:

  - *What underlying program activities and information needs are interrelated to form a Program Area and what are those Program Areas?*

  - *Do the results suggest that there are any program issues that management must examine and resolve?*

- **Chapter 4.0, EPA Hazardous Waste Program Current Systems Assessment,** discusses the current sources of information, including automated and non-automated systems, used by the EPA hazardous waste program. This chapter addresses the following questions:

  - *What are the major sources of information currently used to support the EPA hazardous waste program?*

  - *What are the major gaps and weaknesses for hazardous waste information support?*

- **Chapter 5.0, Potential Technologies and Evaluation Considerations**, discusses guiding principles that should be considered when selecting information technology solutions to support emerging information needs of hazardous waste program activities. This chapter addresses the following questions:

  - *What are some information technologies that can potentially improve EPA's ability to satisfy its hazardous waste information needs?*

  - *What characteristics should be considered when evaluating technologies?*

- **Chapter 6.0, Program Area Prioritization and Recommendations,** identifies the respective priorities of the Program Areas to be explored, identifies other influences and factors that affect information-related projects, and proposes specific information management projects to be conducted. This chapter addresses the following questions:

  - *Which Program Areas need to be analyzed first?*

  - *Which Program Areas have the highest strategic importance?*

- *Which Program Areas have information needs requiring the most improvement?*

- *What are the external and internal Agency influences that may affect Program Area priorities? Do the Program Area priorities change based on these factors?*

- *What short-term projects have been identified in response to external and internal Agency influences?*

- **Chapter 7.0, Transition Plan,** identifies the near-term hazardous waste information projects to be conducted and addresses the order and schedule for completing the projects. This chapter address the following questions:

  - *What is EPA's proposed Program Area Analysis (PAA) plan, including projects, resources, schedules, and outputs/outcomes?*

  - *What are the key principles to consider in conducting the PAAs and short-term projects?*

  - *What are the issues concerning the successful coordination of EPA (both headquarters and regions) and state PAAs, and what is the appropriate framework for resolving these issues?*

2.0 THE EPA HAZARDOUS WASTE PROGRAM ASSESSMENT

This chapter discusses the assessment of the EPA hazardous waste program and addresses the following areas:

- Key questions answered by this chapter.
- Key findings of the hazardous waste program assessment.
- Discussion of EPA hazardous waste program organizations and functions, senior management views of program direction and information management from the perspective of the primary RCRA organizations (i.e., OSW, OECA, regional offices), and the RCRA strategies required to implement the program.

2.1 KEY QUESTIONS

Which EPA organizations primarily support the hazardous waste program?

What are management's views from the EPA organizations supporting the hazardous waste program?

What are the key strategies of EPA managment and staff to implement the hazardous waste program?

2.2 KEY FINDINGS

Findings are presented for the organization of the EPA hazardous waste program, the direction of the program, and the direction of information management.

2.2.1 Organization

- The EPA hazardous waste program is supported primarily by several organizations: OSW within the Office of Solid Waste and Emergency Response (OSWER), Office of Enforcement and Compliance Assurance (OECA), and the hazardous waste divisions in the 10 EPA regional offices.
- EPA's role is evolving from an emphasis on program development and implementation toward one with more emphasis on evaluation and program improvement. A major thrust of the future RCRA program is movement toward a more state-delegated/operated program, thereby reducing EPA's direct implementation function.

2.2.2 Program Direction

- EPA's approach to promoting environmental protection (including the hazardous waste program) is changing from command and control regulatory activities to providing more flexibility in achieving environmental protection, including expanded use of voluntary actions and initiatives.

- In the future, all RCRA organizations will likely place less emphasis on program activities and more emphasis on environmental results to measure program success.

- A greater emphasis on compliance assistance activities will require the development of measurement techniques to determine stakeholder needs and the effectiveness of different compliance assistance tools in meeting those needs.

- EPA must continue to reinvent and streamline the existing program to enhance the Agency's ability to meet its mission in an era of increasingly constrained resources and to make it simpler and less burdensome for facilities to show compliance with environmental regulations and other performance standards.

- The EPA hazardous waste program activities will need to be integrated with EPA's multi-media approaches to environmental protection.

- The EPA hazardous waste program will be incorporating more risk-based decision-making into all program development, implementation, and evaluation activities.

2.2.3 Information Management Direction

- The information needs of the EPA hazardous waste program should drive the development of information systems. The information systems should not drive hazardous waste program activities.

  - Program decisions and program activities should not be dictated only from information available in a national system.

  - Definitions used in substantive program activities should be standardized and developed directly by the program personnel before being collected and stored in an information system. The information system should not force definitions by selecting data in a particular way.

- Information must be made available and explained to the public to promote local stakeholder participation in permitting, compliance, and other community-based activities (especially as multi-media decision making increases).

- Hazardous waste information must be integrated with EPA information systems, as well as other outside information systems, to support multi-media activities.

- Hazardous waste program information must be more readily available to users, less resource-intensive to maintain, and of higher quality to support quality scientific and technical analyses.

- Minimizing the burden on the reporting community must be a priority consideration when identifying the information needed to support the EPA hazardous waste program.

- To help reduce unnecessary burden on the reporting community, EPA must strive to identify and maintain fundamental core information to support the hazardous waste program and must focus burden reduction efforts on non-fundamental core information.

- To promote consistent implementation of the hazardous waste program at EPA headquarters and the regions, EPA must provide greater access to certain specific types of program information (e.g., regulatory and policy interpretations, rule makings with background documents, and guidance materials).

2.3 DISCUSSION

EPA used a five-step assessment process to identify the overall goals, strategies, and activities in its hazardous waste program (See Exhibit 2-1). Once identified, these goals, strategies, and activities were then used to identify and group information needs of the EPA hazardous waste program (discussed in later chapters of this report).

> [**NOTE:** the relationship of this process to the Government Performance and Results Act (GPRA) and OSW's strategic planning process is presented in Section 2.3.2.]

The first step involved interviews with senior management from OSW, OECA, the Office of Information Resources Management (OIRM), and regional offices. (Appendix C contains a list of the managers who were interviewed.) During the second step, several RCRA hazardous waste program experts drafted a list of program activities. The third step consisted of focused sessions with program representatives to identify their strategies and expected activities in the next 5 years and to identify associated information needs (see Chapter 3). In preparing for these sessions, facilitators compiled information from OSW's Strategic Plan (Appendix A) and other Agency planning documents (Appendix D contains information on Agency initiatives) and presented this information to participants so they could formulate the goals and strategies of the EPA hazardous waste program. The fourth step involved a national meeting held in

	Process/Players	Activity
Step 1	Senior management interviews (Spring '95)	▸ Defined program vision ▸ Identified program goals and strategies
Step 2	Headquarters team of program experts (Spring '95)	▸ Identified high level program activities ▸ Reviewed OSW Strategic Plan and other planning documents for information on Agency goals and strategies
Step 3	Focused sessions with program representatives (Summer/Fall '95)	▸ Refined program goals, strategies, and activities ▸ Identified information needs associated with strategies
Step 4	National session with headquarters and regional staff (Fall '95)	▸ Reviewed/refined program goals, strategies, information needs ▸ Grouped information needs into activity categories
Step 5	Headquarters team of program experts (Winter/Spring '96)	▸ Refined/supplemented list of activities, information needs ▸ Grouped needs into categories for future analysis

Exhibit 2-1. Five Steps in EPA's Hazardous Waste Program Assessment

September 1995 that brought together program staff and managers to combine, better categorize, and prioritize the goals, strategies, activities, and information needs identified in the earlier steps. (See Appendix E for List of Participants in the September 1995 Headquarters/Regional Meeting.) The final step consisted of internal revision and supplementation (for completeness) of the products from earlier steps.[1]

2.3.1 EPA Hazardous Waste Program Organizations and Functions

Several organizations within EPA share responsibility for development and implementation of the Agency's hazardous waste program. Within EPA, two headquarters offices (OSW and OECA) and the hazardous waste divisions in the 10 regional offices are primarily responsible for the development, implementation, oversight, and evaluation of the hazardous waste program. Through the RCRA delegation process known as "Authorization", individual states have assumed or will be assuming responsibility from EPA for specific program elements (e.g., permitting, inspections, and enforcement). For those program elements that have not been delegated via the authorization process, EPA retains responsibility for program implementation. Exhibits 2-2, 2-3, and 2-4 summarize the roles of different offices or divisions within the three major EPA organizations responsible for the hazardous waste program. In addition, OIRM plays a major role in establishing standards and monitoring the information management activities of EPA.

2.3.2 Senior Management View of the EPA Hazardous Waste Program

Senior management in OSW, OECA, OIRM, and the regions were interviewed to obtain:

- Their insight on information needs of the EPA hazardous waste program.
- Their vision for program activities over the next 5 years.
- The types of decisions required.
- The information needed to support these decisions.
- Their expectations for the WIN initiative.

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[1] Other offices that participate in or directly affect aspects of RCRA activities and that have not yet participated in this process include the Office of Research and Development (ORD) and the Office of General Counsel (OGC). The views of these organization will be incorporated through the review process of this document. These organizations are important in many ways to the effort of reinventing information management for the EPA hazardous waste program. For example, ORD supports the program with studies on risk, treatment performance, and pollution prevention options, and OGC needs and uses information to support litigation and to advise program staff on developing legally defensible regulations and policies.

OSW was created to implement RCRA. This office comprises the following six divisions:

- **Hazardous Waste Identification Division (HWID)** - Identifies wastes and criteria that should be regulated as solid and/or hazardous, as well as those wastes currently in the hazardous waste program that should be exempt from regulation.

- **Permits and State Program Division (PSPD)** - Develops standards and guidance for permitting and oversight of the state authorization program and tribal activities. The division also is responsible for developing rules, guidance, and policies for corrective action and munitions.

- **Hazardous Waste Management and Minimization Division (HWMMD)** - Develops land disposal restriction standards, emission standards, and other regulations governing the burning of hazardous waste, the waste minimization program, and capacity assurance analyses. It also has the co-lead within OSW for the WIN initiative.

- **Economics, Methods, and Risk Analysis Division (EMRAD)** - Performs risk and economic analyses of proposed and existing regulations and develops analytical methods for analyzing waste.

- **Communication, Information, and Resource Management Division (CIRMD)** - Performs budget planning and allocation for OSW, information technology management, and outreach to the public (e.g., RCRA Hot-Line). The division also has the co-lead within OSW for the WIN initiative.

- **Municipal and Industrial Solid Waste Division (MISWD)** - Develops standards for facilities that manage industrial Subtitle D wastes, provides regions with support for the state municipal landfill permitting program, and develops procurement guidelines for recycled materials.

Exhibit 2-2. Roles of Divisions within the Office of Solid Waste

OECA is organized to address media-specific issues, as well as provide enforcement and compliance assistance by industrial sector across media (e.g., air, water, land releases for the petroleum sector). Essentially, the five offices within OECA, identified below, support the EPA hazardous waste program in one way or another, although only one of those offices has a division specifically set up to handle RCRA-only enforcement issues.

- **Office of Compliance (OC)** - Activities in this office include developing voluntary compliance programs, supporting information management, identifying compliance assistance tools and assessing their effectiveness, analyzing trends in noncompliance, targeting facilities for compliance assistance, establishing RCRA specific priorities, and evaluating regional Memoranda of Agreement (MOA).

- **Office of Regulatory Enforcement (ORE)** - ORE emphasizes a more traditional enforcement approach. Activities in this office include developing guidance for enforcement, conducting outreach and work groups, developing regulations, supporting enforcement cases, and conducting targeting and prioritization, particularly for input into MOAs.

- **Office of Site Remediation and Enforcement (OSRE)** - OSRE concentrates primarily on developing and evaluating compliance with the Corrective Action Program (i.e., site cleanup). OSRE's activities include rule makings, identifying alternatives to RCRA corrective measures, and improving the efficiency of the Corrective Action Program.

- **Office of Federal Facilities (OFF)** - OFF responsibilities include overseeing the compliance of federal facilities with EPA's environmental regulations, including RCRA. The major activities of this office include conducting inspections, conducting oversight of clean-up activities, and providing assistance with corrective action orders and legal jurisdictional matters.

- **Office of Criminal Enforcement (OCE)** - OCE is the criminal investigation arm of EPA with respect to actions that harm the environment and/or human health. The major activities of this office include case screening and targeting, as well as preparing information to support criminal cases.

Exhibit 2-3. Roles of the Offices within the Office of Enforcement and Compliance Assurance

Some regions have organized their RCRA activities into separate hazardous waste divisions, while others are organized into multi-media groups, similar to OECA. Though the activities may vary somewhat from region to region, the following core activities are similar in every region:

- **Permitting and Corrective Action** - The regions prepare permits, evaluate the progress that states are making in issuing permits, and conduct and oversee facility evaluations and cleanup.

- **Compliance and Enforcement** - The regions perform compliance assistance, set priorities for inspections, conduct inspections, issue enforcement orders, ensure correction of non-compliance, write orders, work on criminal investigations, and track compliance.

- **Waste Minimization** - The regions develop waste minimization programs, allocate grants for states and facilities to pursue waste minimization, and target waste minimization activities.

- **Information Management** - The regions collect data to track facility and program status, support targeting efforts, track state and tribal programs according to grant agreements, and evaluate programs.

- **State Authorization and Program Development** - The regions review state authorization applications to ensure consistency with federal RCRA program requirements. Regions review and approve state and tribal grant applications for EPA funding to perform RCRA program implementation activities (i.e., permitting corrective action, enforcement). Regions provide technical assistance to states and tribes to improve their programs.

Exhibit 2-4. RCRA-Related Roles within EPA Regional Offices (e.g., Hazardous Waste Divisions)

These interviews are summarized from the perspective of the key EPA RCRA organizations and are presented below.

OSW Management View of the EPA Hazardous Waste Program

In general, OSW managers saw the role of their program changing from one of less emphasis on developing new regulations to one with more emphasis on promoting flexibility and increased use of voluntary programs, such as waste minimization and implementation assistance. A heavy emphasis on information dissemination is central to this evolving role. In developing programs, either regulatory or voluntary, OSW managers noted that a greater focus will be placed on conducting risk assessments and on identifying and using environmental indicators for evaluating program progress and for targeting resources and prioritization, also being addressed through the GPRA project (see Exhibit 2-5).

The Government Performance and Results Act (GPRA) of 1993 requires federal agencies to:

- Develop strategic plans.
- Prepare annual plans setting performance goals.
- Report annually on actual performance compared to goals.

OSW conducted a comprehensive strategic planning process in FY 1994 and has updated the OSW Strategic Plan for FY 1996 (see Appendix A). The OSW Strategic Plan for FY 1997 will build on these foundations and will incorporate input from the WIN initiative. In addition, it will be expanded to meet the GPRA requirements that are becoming effective, particularly as they relate to performance-based budgeting. The initial Agency-wide strategic plan under GPRA is due in September 1997; the RCRA component will need to be drafted by March 1997. EPA plans on using both the FY 1996-1997 OSW Strategic Plan and the strategic vision outlined in Chapter 2 of this document as the foundation for the OSW component of the Agency's GPRA strategic plan. Future strategic planning efforts will proceed in concert with GPRA implementation efforts and will also interact closely with WIN efforts to ensure clear and coordinated direction and integration. As they become known, EPA will incorporate the GPRA requirements, particularly as they relate to information management, into the follow-on phases of the WIN initiative.

Exhibit 2-5. Coordination between GPRA and RCRA Strategic Planning

Given these program directions, OSW managers noted that some of these evolving roles will have heavy implications for information management. Specifically, the need to take risk into account during any regulation development activities and program targeting efforts will require detailed data (e.g., toxicity, fate-and-transport receptor, and economic analyses data).

Currently, adequate and accurate information is often not available. The need for additional information must be weighed with the ongoing effort to reexamine the burden to the regulated community.

As EPA grapples with identifying measures of environmental performance and takes a more multi-media approach to the program, OSW managers recognized the need to seek out other databases, outside of OSW and EPA if necessary, that could assist the Agency in presenting a more integrated view of a facility's environmental status. Further, they realized that multi-media approaches may lead to more consolidated reporting at a facility level.

OSW managers also noted the importance of more community-based approaches and decision making to achieve environmental protection (e.g., Brownfields, Project XL program, Common Sense Initiative). These projects emphasize the need for a flexible RCRA program that focuses more on results and not as much on process. Moreover, OSW senior management recognized the significance of the changing nature of their role in the EPA hazardous waste program in terms of increasing community outreach and communication with program stakeholders (regions, states, tribes, regulated community, and the public). OSW managers also noted the importance of the reinvention of regulations and the continuous evaluation and improvement of programs. As a result, OSW will need timely, accurate, and useful information for internal analysis and external review.

OECA Management View of the EPA Hazardous Waste Program

OECA senior managers identified similar evolutionary changes in OECA's roles. Specifically, they determined that the emphasis on compliance assistance was leading the program towards the development of voluntary programs. In addition, OECA managers noted that the program needed to increase consideration of risk information when conducting targeting for enforcement and compliance assistance. They recognized the clear requirement to develop environmental indicators reflecting real world outcomes and to use such indicators in evaluating the program. OECA managers placed an even greater emphasis on conducting multi-media analyses and targeting and on developing enforcement and compliance programs by industrial sector.

In emphasizing the multi-media and industrial sector approach, OECA managers clearly outlined the requirement to integrate Agency databases and provide useful data (i.e., consistent, high quality) for sector-based analyses. They further emphasized the requirement for consolidated databases that would ultimately present an integrated view of individual facilities. In addition, they found that OECA's focus on compliance assistance and voluntary programs (e.g., supplemental environmental projects) is creating a requirement to formally track voluntary compliance and multi-media inspection results as part of information management. OECA managers emphasized the importance of clearer definitions of state and federal roles as part of information management and of making information dissemination to the public a driving force in the Agency's information management efforts.

Regional Management View of the EPA Hazardous Waste Program

Regional managers highlighted the significance of the evolutionary migration of EPA's role from traditional program implementation to program evaluation and combined technical assistance/program implementation. Regional managers noted that information dissemination will become increasingly important as EPA's role changes. They discussed the importance of state partnerships in determining how the program will be implemented.

In addition, regional managers emphasized the requirement to explore alternatives to the existing paradigms of implementing the hazardous waste program (e.g., alternatives to permitting, alternatives to RCRA corrective action activities). They also discussed the importance of developing meaningful environmental indicators to measure progress of the hazardous waste program and satisfy requirements of the 1993 Government Performance and Results Act.

In terms of information management, regions were viewed as facing challenges similar to headquarters. The information management challenges identified included developing consistent state and federal data, collecting and managing data to support meaningful environmental indicators, collecting data measuring the effectiveness of compliance assistance and other tools, working toward development of integrated databases to support multi-media and placed-based analyses, and providing data to enable decisions to be made based on risk.

Other Management Views of the EPA Hazardous Waste Program

As mentioned above, managers from OIRM were interviewed to assess their view of the hazardous waste program. OIRM is part of EPA's Office of Administrative Resource Management and is responsible for developing policies and procedures, as well as information and technical architectures, to support Agency-wide system development and integration efforts. Within OIRM, one of the divisions, the Enterprise Technology Services Division (ETSD), is the organization responsible for offering mainframe, Internet, electronic mail, and local area and wide area network services. ETSD has been integral to providing the infrastructure for the current EPA systems that support the hazardous waste program.

ETSD views the information challenges of the EPA hazardous waste program as being similar to those of other Agency environmental programs. ETSD notes that it is important for EPA to concentrate on correctly identifying the information needed to support the EPA program and not attempt to define the states' information needs.

ETSD is also actively involved in identifying various business information architectures that promote information integration and dissemination as a mechanism for stakeholder involvement. ETSD believes one of EPA's greatest challenges will be EPA/stakeholder coordination. As information collection and dissemination moves towards more complete state control, EPA and states will need to coordinate concerning the information that will be

consolidated and supported at the national level for EPA and public use. In addition, the role of technology in such a state-delegated model will become increasingly important because of the volume of information that will be transmitted.

2.3.3 Strategies of the EPA Hazardous Waste Program

Eight program-specific facilitated sessions and one national meeting were conducted during summer 1995 with managers and staff from each RCRA hazardous waste program office to determine the EPA RCRA community information needs.

The participants in this process first identified an overall program mission and goals to achieve that mission. Exhibit 2-6 presents the collective program vision of participants in the facilitated sessions. Appendix F provides a more detailed description of the program goals and strategies developed at these meetings. For each long-term program goal, EPA program assessment participants described what strategies could be used and what actions and resources would be necessary to achieve the goal. In so doing, they identified approximately 150 key strategies. These were subsequently refined and supplemented to total approximately 200 strategies, listed in Appendix F.

To facilitate further discussion and use in the WIN initiative and this ISP, the program assessment participants then grouped the 200 strategies into the six categories identified in Exhibit 2-6. The following paragraphs provide detail on these strategic categories.

> [**NOTE:** These strategies are being used as an interim analytical tool to identify the information needs portion of this ISP, which is the subject of Chapter 3. Overall information-related strategies for the WIN initiative itself will emerge in subsequent analysis of the ISP results.]

Program Improvement Strategies

These strategies describe specific actions identified by session participants that should be implemented to improve the effectiveness (i.e., reduce costs, greater environmental protection, streamlining) of existing program activities. They also describe the actions necessary to develop and implement new program activities. Specifically, many strategies in this category deal with introducing regulatory flexibility into the program and introducing non-regulatory programs that provide facilities with incentives to manage hazardous waste in a sound manner (e.g., pollution prevention and waste minimization programs, Common Sense Initiative, and Project XL). In addition, a number of strategies focus on improving the internal operations of EPA through streamlining and burden-reduction efforts. Finally, a large number of strategies deal with improving relationships with stakeholders, such as the states and the regulated community, through stakeholder feedback and improvements in program assistance (e.g., outreach, technical assistance).

EPA Program Goals

- RCRA is protective of human health and the environment and focuses more on results than process.
- EPA provides RCRA information that is accurate, accessible, easy to use, and useful.
- The hazardous waste program's effectiveness in protecting human health and the environment can be measured and demonstrated.
- EPA maintains effective and efficient partnerships with stakeholders.
- The RCRA program integrates a multi-media environmental protection approach.
- The RCRA program is based on sound science.
- RCRA is easy to understand.
- RCRA promotes source reduction and waste minimization.

Categories of EPA Program Strategies

- ***Program Improvement*** - Includes strategies for specific reinvention actions that must be implemented to improve the effectiveness (e.g., reduce costs, promote greater environmental protection, improve partnerships, reduce burden through streamlining) of the existing program activities and actions necessary to develop and implement new program activities.
- ***Information Dissemination*** - Includes strategies for disseminating information about the EPA hazardous waste program to the RCRA stakeholders to empower decision makers at all levels.
- ***Information Gathering*** - Includes strategies for gathering information about stakeholder needs, available technologies, and effective compliance activities to develop and implement the hazardous waste program.
- ***Risk-based Decision-Making*** - Includes strategies about program activities (corrective action priorities, targeted risk-based waste reduction, budgeting) being developed and implemented according to the associated risks to human health and the environment.
- ***Program Measurement and Evaluation*** - Includes strategies for measurement and evaluation of program tools and effectiveness (e.g., environmental indicators, compliance assistance tools).
- ***Resource Availability*** - Includes strategies for the EPA hazardous waste program to provide sufficient resources or identify ways to leverage resources (e.g., manpower, extramural monies, grant monies) to achieve programmatic goals.

Exhibit 2-6. EPA Program Goals and Strategies as Identified by Program Management and Staff in 1995 Facilitated Sessions for the Purposes of Identifying Information Needs

Information Dissemination Strategies

This category of strategies describes specific information (i.e., policy and guidance documents, facility status, etc.) that should be transmitted to the hazardous waste program stakeholders. Several strategies describe the requirement to identify fundamental information about the hazardous waste program and disseminate information about the success of the program to its stakeholders (e.g., public, regulated facilities, environmental groups). Through better information dissemination, the community would be increasingly empowered to make decisions about facilities and to influence the level of compliance and environmental protection. This category also includes a number of strategies that deal with identifying effective methods to disseminate information to stakeholders.

Information Gathering Strategies

The strategies in this category describe specific information (e.g., stakeholder requirements, available technologies, effective compliance activities) that should be obtained to develop and implement the hazardous waste program effectively and efficiently. The strategies focus on the need to gather information from and about stakeholders involved with the hazardous waste program. Many of the strategies concentrate on understanding stakeholder requirements and concerns and the use of that information to shape the EPA hazardous waste program. In addition, some of the strategies focus on improved information gathering approaches, such as one-stop reporting, reducing the reporting burden by 25 percent, and implementing key identifiers for facilities [**NOTE:** Chapter 6 discusses these approaches.]

Risk-Based, Decision-Making Strategies

This category of strategies describes program activities (e.g., corrective action priorities, targeting, reduction of the most persistent, bioaccumulative, and toxic wastes) that should be developed, implemented, and/or performed, based on the associated risks to human health and the environment. The strategies in this category typically emphasize the need to perform risk-based, multi-media analyses when developing and targeting program activities. They include the concepts of incorporating risk into targeting activities, identifying populations and ecosystems at highest risk, and focusing programs on wastes that pose the highest relative risk.

Program Measurement and Evaluation Strategies

These strategies describe the measurement and evaluation of program results (e.g., environmental indicators) and program tools (e.g., compliance assistance tools) that should be used to assess the effectiveness of various program activities. A number of strategies in this category discuss the need to have environmental indicators that more directly and meaningfully measure the progress of the RCRA program in protecting human health and the environment. Some of the strategies also discuss the need to balance environmental indicators with the current mode of evaluation based on activity status (e.g., number of permits issued, number of

RCRA Facility Investigations conducted). This category of strategies is also reflected in OSW's effort to meet the requirements of the plans and activities for implementing the 1993 GPRA. In this effort, OSW is evaluating program performance in order to prepare the Annual Program Performance Report required by the GPRA.

Resource Availability Strategies

The strategies in this category describe how the program can leverage resources (e.g., staff, extramural monies, grant monies) to achieve programmatic goals. Essentially, the strategies cover such actions as ensuring that adequate resources are available for assisting public and private partners in implementing the hazardous waste program and information management activities.

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3.0 IDENTIFICATION OF EPA HAZARDOUS WASTE PROGRAM AREAS AND INFORMATION NEEDS

This chapter identifies the seven Program Areas, program activities, and overall information needs of the EPA hazardous waste program. The Program Areas are based on and reflect the interrelationships between and among program activities and overall information needs of the EPA hazardous waste program and represent an important product of the EPA WIN ISP project. The strategic significance of the Program Areas to the mission, goals, and strategies of the EPA hazardous waste program and EPA's priorities for Program Area project implementation are detailed in Chapter 6 of this report.

This chapter addresses the following areas:

- Key questions answered by this chapter.
- Key findings in the identification of EPA hazardous program areas and information needs.
- Discussion of key program activities, high level information needs of managers and staff when performing key program activities, and the seven Program Areas of the EPA hazardous waste program.

3.1 KEY QUESTIONS

What underlying program activities and information needs are interrelated to form a Program Area and what are those Program Areas?

Do the results suggest that there are any program issues that management must examine and resolve?

3.2 KEY FINDINGS

- The EPA hazardous waste program has numerous information needs that range from facility-specific to program-wide. This broad range of information needs is driven by the types of activities the program staff will be conducting in the near term (i.e., 5 years). These activities include efforts related to program development, implementation, and evaluation.

- Despite burden reduction efforts, the information needs do not appear to be decreasing. The WIN project highlights the tension existing between the goal of achieving significant burden reduction and needs for certain facility-specific information. Also, certain new requirements introduce new information needs, such as the GPRA. This tension among the broad-brush goals for burden reduction, better quality information on environmental and health impacts, and better measurements of those impacts is a fundamental issue EPA must resolve in the near future.

- Based on the relationship of underlying program activities and information needs, seven Program Areas were identified for the EPA hazardous waste program:

  - *Program Development.*
  - *Program Evaluation.*
  - *Program Implementation.*
  - *Program Implementation Support.*
  - *Information Sharing.*
  - *Program Management.*
  - *Studies and Research.*

- Regions and headquarters identified information needs in all Program Areas, although the frequency and use of those needs varied.

3.3 DISCUSSION

During the executive interviews and facilitated sessions of the EPA program assessment (see Chapter 2), EPA managers and staff identified 7 key hazardous waste program activities and 46 sub-activities, as well as 65 high level information needs. Further analysis of these results and the intersections among program activities and information needs led to the identification of the seven Program Areas. (For a more detailed description of the approach used to identify the Program Areas, see Appendix H). These Program Areas are the core concept for further analysis in this ISP and for identification of the next steps for the WIN initiative.

The program activities discussed in this chapter encompass EPA's responsibilities for program implementation, development, and evaluation of its hazardous waste program. The information needs identified in this chapter represent the entire spectrum of information required by management and staff in EPA headquarters and the regions to perform the EPA hazardous waste program activities and support the EPA hazardous waste strategic vision as discussed in Chapter 2 of this report. For purposes of this ISP and to encourage the broadest possible input to the ISP process at this stage, no limitations or restrictions (e.g., streamlining initiatives, budget constraints) were placed on management and staff in identifying their information needs. The information needs are considered in overarching categorical terms and are not

intended to represent specific data elements. Further refinement of these information needs (i.e., specific data element and definitions) will occur as part of follow-on information management projects that represent the next steps in the WIN initiative.

3.3.1 Key Program Activities

Headquarters and regional staff participated in several facilitated sessions to identify the major activities of the EPA hazardous waste program. The identification of program activities is the first step in the process of interrelating program activities and information needs to identify Program Areas. This process is detailed in Section 3.3.3 of this chapter.

Participants in facilitated sessions were encouraged to ensure completeness in the activities identified and to identify activities common across current organizational lines. For example, program evaluation occurs within OSW, OECA, and regional offices. In this situation, this activity was identified only once. The seven key program activities addressed below and in Exhibit 3-1 cover all 46 sub-activities identified initially by the session participants:

- **Program Direction Establishment** - Determines the strategic direction of the hazardous waste program.

- **Hazardous Waste and Waste Management Issues Identification** - Identifies the hazardous waste and management issues that must be brought to management and staff attention for discussion and resolution.

- **Program Standards Development** - Develops regulatory and non-regulatory standards to support implementation of the EPA hazardous waste program based on statutory requirements and program priorities.

- **Program Implementation** - Encompasses both implementation (in partnership with states and tribes) and oversight of the EPA hazardous waste program.

- **Environmental Results Monitoring and Evaluation** - Assesses the degree to which program goals and objectives are actually realized in the environment and provides feedback for program modifications/enhancements.

- **Information Management** - Provides the mechanics for collecting, integrating, and disseminating information to support the EPA hazardous waste program.

- **Cross-Cutting Activities** - Includes those activities that affect all other activities in the hazardous waste program (e.g., collecting and managing feedback to and from stakeholders, ensuring effective communication).

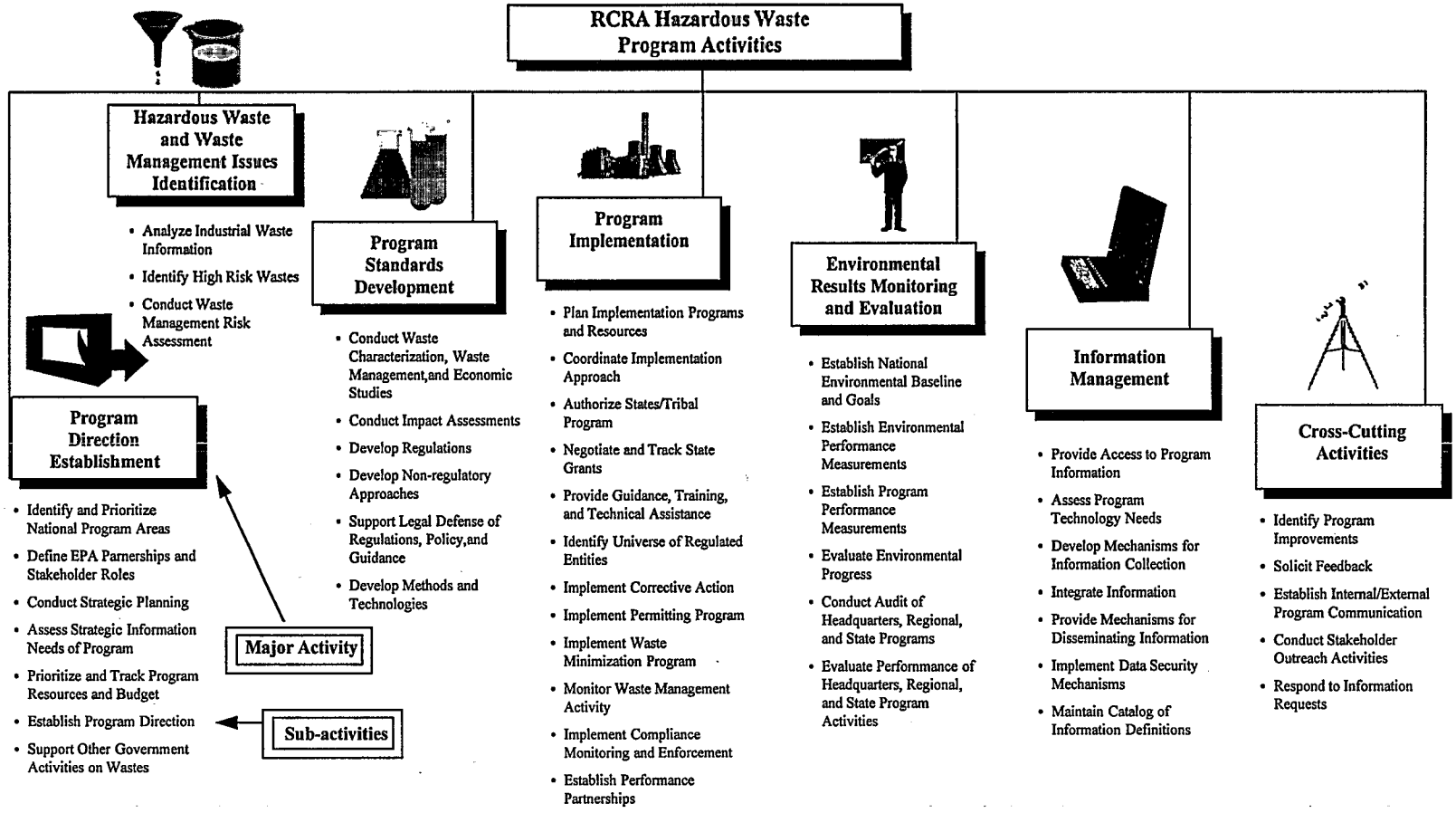

Exhibit 3-1. Key Activities and Sub-Activities of the EPA Hazardous Waste Program Used to Identify Program Areas

3.3.2 High Level Categories of Information Needs

Headquarters and regional staff participated in an assessment to identify the information needs of the EPA hazardous waste program. The identification of information needs is the second step in the process of interrelating program activities and information needs to identify Program Areas. Section 3.3.3 provides detail on this process.

In a series of facilitated sessions (described in Chapter 2), EPA managers and headquarters and regional staff identified 65 strategic information needs, as noted in the introduction to this chapter. These needs were grouped into eight high-level information categories to assist in the identification of Program Areas (see Section 3.3.3). It is important to note that at this point of the EPA hazardous waste program ISP, the analysis of information is most appropriately performed at the categorical level. In subsequent phases, EPA will identify the specific information needs in considerably greater detail to assist in defining particular data elements.

The 8 high-level information categories and 65 strategic information needs are listed in Exhibit 3-2 and described in Appendix G.

The results of the information needs assessment indicate that there are many information needs of the RCRA community and that everyone believes his or her information needs are important. These needs range from facility-specific to program-wide information. The regions and headquarters identified information needs in all program areas, although the frequency and use of those needs varied. The results also tend to reflect the fact that EPA, especially the regions, still requires information to support program implementation activities, even though parts of the Agency are moving their focus away from direct implementation and toward program evaluation and assistance. Although EPA managers and staff are working toward the goal of performing less direct implementation and more evaluation, they acknowledge that in the near term, information is still needed to support the regions' implementation role. This role will continue to drive EPA to request information specific to facility, waste, and program implementation. As EPA continues to move toward an evaluation role, it is unclear as to what, if any, reductions in information requirements will be realized if EPA regions remain in an implementation role, at least partially.

The information needs assessment also highlights the tension existing between the goal of achieving significant burden reduction and requirements for facility-specific information (not related to regional implementation needs). It is important to remember that the information needs identified were deemed necessary to meet the ISP goals, strategies, and activities of the EPA hazardous waste program (i.e., program implementation, program development, and program evaluation) and not to satisfy other Agency priorities. Despite burden reduction efforts, there does not appear to be a reduction in information needs. These issues will be reviewed further during the Program Area Analysis, the next phase of the WIN project.

High Level Information Category	Strategic Information Needs	
Facility Identification and Business Operations (1000 Series)	1100	Specific Lists of Facilities
	1200	Name/Address and Location
	1300	Regulatory Identification Number
	1400	Owner/Operator Identification
	1500	Industrial Sectors and Production
	1600	Facility and Program Size
	1700	Economic Profile
	1800	Facility Waste Management Activities
	1900	Commercial Waste Handler Status
Waste Generation, Composition, and Management (2000 Series)	2100	Waste Identification Codes
	2200	Waste Types and Constituents
	2300	Waste Generation Processes
	2400	Waste Quantities Handled On-site
	2500	Off-Site Shipments of Wastes
	2600	Pollution Prevention Achievements
	2700	Wastes not under Subtitle C
	2800	Capacity Analyses
	2900	Management Unit Description and Status
Facility RCRA Implementation Activities (3000 Series)	3100	Notification Status
	3200	Permit Activities
	3300	Enforcement Activities
	3400	Compliance Activities
	3500	Remediation/Stabilization Activities
	3600	Performance Standards and Variances
Facility and Constituent Risk Analyses (4000 Series)	4100	Environmental Site Characteristics
	4200	Population Exposure and Environmental Justice
	4300	Multimedia Releases and Monitoring
	4400	Constituent Toxicity and Characteristics Data
	4500	Fate and Transport Model
	4600	Testing and Performance Data
	4700	Remediation Risk Analyses
	4800	Regulatory Risk Analyses
	4900	Permit and Compliance Risk Analyses

Exhibit 3-2. Overview of the EPA Hazardous Waste Program Strategic Information Needs Grouped into Eight High-Level Categories (numbers represent sub-category denominations used in this assessment)

High Level Information Category	Strategic Information Needs	
Program Operations, Plans, and Evaluation Information (5000 Series)	5100	Environmental Indicators
	5200	National Program Goals and Plans
	5300	National Program Performance Tracking
	5400	Authorization and Delegations Status
	5500	Quality Assurance Data and Plans
	5600	Administrative Resources
	5700	Grants and Contract Management
	5800	Program Implementation Costs to Stakeholders
Customer Service and Stakeholder Interactions (6000 Series)	6100	Stakeholder Identification and Resources
	6200	Roles and Responsibilities
	6300	Stakeholder Priorities, Perceptions, and Needs (Feedback)
	6400	Public Inquiries and Responses
	6500	Stakeholder Participation Activities
	6600	Burden Reduction Success Information
	6700	Voluntary and Innovative Programs
	6800	Technical Compliance Assistance Needs
Information Systems, Access, and Outreach (7000 Series)	7100	Core Data Elements and Definitions
	7200	National Information Systems
	7300	Local and Manual Information Systems
	7400	Information Technology Resources
	7500	Technical Experts and Peer Review Access
	7700	Public Access
	7800	Technical Outreach and Training Needs
Legal and Policy Documents (8000 Series)	8100	Regulatory and Policy Flexibility Analyses
	8200	Federal Statutes and Authorities
	8300	Federal Regulations
	8400	Regulatory Support Documents
	8500	Federal Policy and Guidance
	8600	Court Decisions and Regulatory Litigations
	8700	Congressional or Executive Mandates
	8800	Other Agency Regulations and Policy
	8900	International Agreements and Law

Exhibit 3-2. Overview of the EPA Hazardous Waste Program Strategic Information Needs Grouped into Eight High-Level Categories (numbers represent sub-category denominations used in this assessment) (continued)

3.3.3 Identification of Program Areas

A Program Area represents a set of activities that create and/or share a common set of information. By identifying Program Areas for information management purposes, organizations and activities that create and use the same information can be considered together under one Program Area. Program Area identification facilitates the development of a more integrated set of systems and avoids the problems associated with independent efforts to solve common information management problems. (Appendix H provides a detailed explanation of the development of the Program Areas based on the program activities and information needs. The appendix also explains how the Information Engineering Facility™ CASE Tool was used as an aid in developing the Program Areas.)

Using the process described above, the following Program Areas for the EPA hazardous waste program were identified:

- *Program Development.*
- *Program Evaluation.*
- *Program Implementation.*
- *Program Implementation Support.*
- *Information Sharing.*
- *Program Management.*
- *Studies and Research.*

To capture this process, Exhibit 3-3 displays the program activities (shown in boxes) and information groups (shown in ovals) that are interrelated to form each Program Area.

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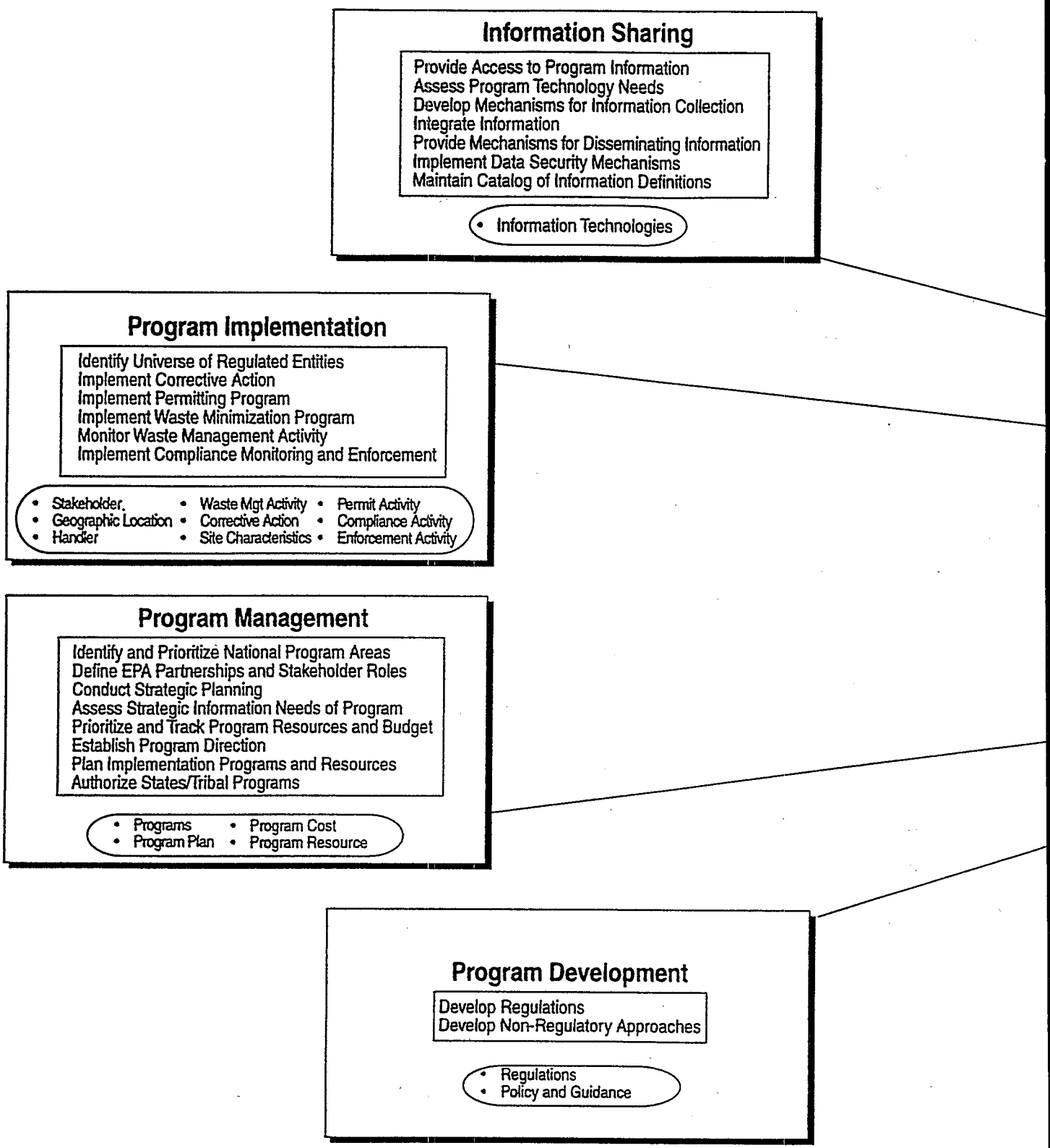

Exhibit 3-3. Overview of the EPA Hazardous Waste Program Areas

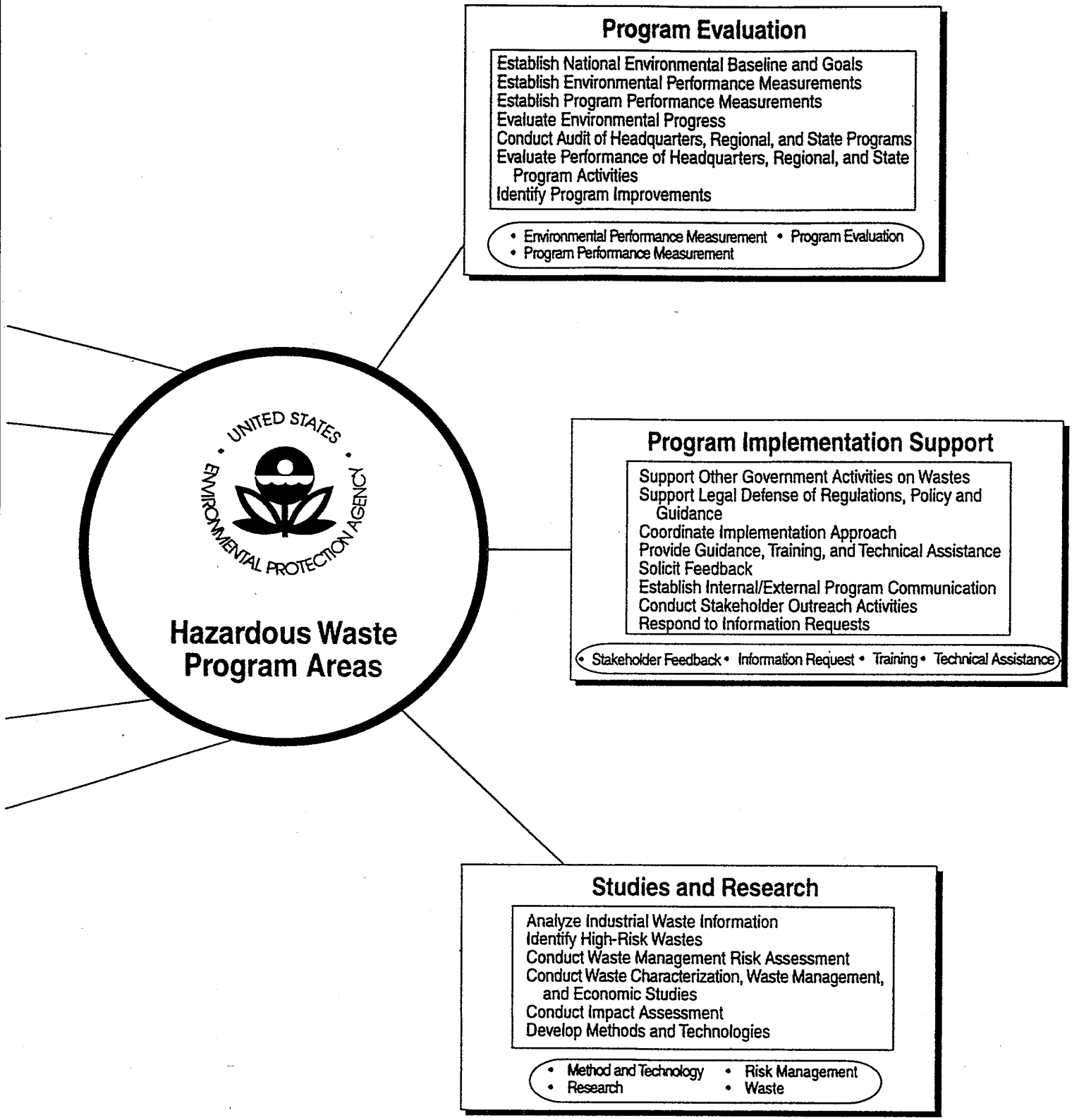

Exhibit 3-3. Overview of the EPA Hazardous Waste Program Areas (continued)

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4.0 EPA HAZARDOUS WASTE PROGRAM CURRENT SYSTEMS ASSESSMENT

The Current Systems Assessment was conducted to identify the current information sources used by OSW, OECA, and regional staff to support the hazardous waste program activities and information needs identified in Chapter 3 of this ISP. Additional objectives of the assessment were to determine how easily the users can access the information in the identified sources and to discover user perceptions of information reliability for each of the identified sources.

This chapter focuses on the following areas:

- Key questions answered by this chapter.
- Key findings of the Current Systems Assessment.
- Discussion of the adequacy of the current information sources in supplying EPA's strategic information needs.
- Discussion of the major sources that supply data to the EPA hazardous waste program, including a description of the reliability and accessibility of these sources.

Appendix I provides a detailed discussion of the methods used to evaluate current systems and a discussion of current systems that support each hazardous waste program area, as well as a catalogue of current information sources identified for each information need listed in Chapter 3.

> [**Note:** Chapter 6 presents a summary of the key systems support issues that emerge from this assessment].

4.1 KEY QUESTIONS

What are the major sources of information currently used to support the EPA hazardous waste program?

What are the major gaps and weaknesses for hazardous waste information support?

4.2 KEY FINDINGS

The key findings of the Current Systems Assessment are as follows:

- More than 50 automated and non-automated information sources are currently maintained. Taken as a whole, these sources address the majority of information needed about the regulatory process and hazardous waste activity. Many of these systems are currently available to program staff via the Agency's mainframe, the Agency's value added backbone services (VABS), or the Internet (See Exhibit 4-2).

- Most hazardous waste information sources lack data to support multi-media and industry sector-based assessment of the environmental results for hazardous waste regulation.

- The need to evaluate and combine hazardous waste, scientific, and population and industry demographic information from diverse sources will increase as EPA incorporates multi-media, industry sector, and environmental risk-based approaches in hazardous waste program management. Automated data systems will need to address the requirement to link or combine their information with information obtained from many diverse sources.

- Much of the information supporting the hazardous waste program exists in documents ranging from regulatory policy and guidance to published studies and research. To support broad accessibility to text-based information, EPA should maintain an easily accessed and searchable archive of important documents that support the hazardous waste program.

- Most national data systems are considered difficult to access.

- Most national data systems are considered to have information of medium reliability, which means that the information requires some verification of validation before use.

- Data consistency and reliability issues must be continuously addressed for any information system that acquires its information from diverse suppliers across EPA regions, states, and industry.

4.3 DISCUSSION

EPA identified the types of current systems supporting the EPA hazardous waste program. The current systems were identified through a series of interviews with EPA headquarters (OSW and OECA) and through surveys of Regions 3, 9, and 10. The headquarters interviews included staff from all OSW divisions, as well as OECA's Offices of Compliance, Regulatory Enforcement, and Site Remediation and Enforcement. Although the interviews and surveys did not cover all the systems supporting the hazardous waste program, they did provide useful insight as to the general level of current systems supporting the program. The interviews and surveys focused on the information needs identified in Chapter 3 of this ISP. Program staff were asked to identify the source(s), if any, currently used to obtain the identified information and to rank the accessibility and reliability of the information obtained in terms of high, medium, and low. The program staff provided a broad range of responses. EPA did not perform a statistical analyses of the responses. Rather, EPA assigned numerical values to each of the rankings and averaged the results across participants to assign an overall accessibility and reliability ranking for each information source. EPA then examined the information needs for each Program Area and identified the sources of information updated or accessed.

The six most frequently used information sources are the Biennial Reporting System (BRS), Code of Federal Regulations (CFR), Industry Studies Database (ISDB), Integrated Database for Enforcement Actions (IDEA), Resource Conservation and Recovery Information System (RCRIS), and Beginning of Year Plans (BYP). Many other information sources are regularly used by EPA hazardous waste program staff and are maintained by organizations external to the EPA hazardous waste program, such as the Office of Information Resources Management (OIRM), Office of Pollution Prevention and Toxics (OPPT), Office of Research and Development (ORD), other government agencies, and commercial sources. Most EPA staff interviewed indicated that the majority of their work requires the ad hoc consolidation and evaluation of information about industry and hazardous waste activity. This information is most often obtained from a variety of automated and non-automated sources. It is extremely difficult to link or combine information obtained from the many diverse sources. This difficulty is considered a key weakness of current systems supporting the hazardous waste program, preventing EPA from conducting effective multi-media, sector-based, and environmental risk analysis.

Chapters 2 and 3 of this ISP identify multi-media, industry sector, and environmental risk-based approaches as the future drivers of the hazardous waste program. Current automated information systems were designed as specialized systems for tracking programmatic, regulatory, and hazardous waste activities. These systems either do not address or do not effectively support the information required to manage and evaluate the hazardous waste program from these perspectives. The GATEWAY/GIS system was identified as a reliable source of information for population demographics, but it is difficult to link or combine this information with data from the other current systems. Because information is largely unavailable to support assessments based on multi-media and industry sector, EPA, states, and industry must work together to define the information needed to support these new hazardous waste program directions.

The new multi-media, industry sector, and environmental risk approaches are, by definition, holistic approaches that rely on diverse information. Most of the existing automated data systems were designed from a media-specific perspective to support the specific regulatory activities and information needs of their host regulatory program. As a result, there is very little current systems support for linking or combining information obtained from these automated data systems. To successfully meet the challenges of these new approaches to hazardous waste program management, users will need easy access to national data systems, clear documentation of their information content and limitations, and integrated support for linking and combining information obtained from a variety of sources.

Many of the staff members interviewed indicated they regularly refer to document archives that provide the definitive source for information about topics including hazardous waste program requirements, wastes, treatment standards, and remediation standards. Although most individuals interviewed had access to the documents they considered critical to their work, it became apparent that knowledge of, and access to, much of this information was

limited to the specific organization or staff that maintained these documents, and not to others who could use the information if they knew it was available and accessible.

The inaccessibility of automated national data systems is primarily due to the following factors: most systems reside on the mainframe, which users find difficult or impossible to use; the information in most systems is complex; and systems and information documentation are hard to access and understand. To acquire needed information, most users required the assistance of a technical data systems expert. Accessibility is, therefore, a key weakness of many national data systems. Future projects must develop effective methods for providing easy access to national data systems, flexible methods for accessing their information content, and clear documentation of their information content, its correct usage and limitations.

Most respondents used the expression of medium reliability to describe information requiring some verification or validation before use. For information content control, there are two major types of information sources: those for which content is supplied and maintained by a small number of users and those for which content is supplied and maintained by large numbers of users. In general, the information sources maintained by small numbers of users were considered highly reliable, and those maintained by large numbers of users were considered only moderately reliable.

The key factor influencing the reliability of hazardous waste information obtained in this manner is the degree of consistency in individual interpretation and classification of the real world hazardous waste activity. Achieving information consistency among many suppliers and across many organizations is a daunting task. This task becomes even more difficult during periods of significant change in information requirements. Future information systems projects must recognize that consistent human interpretation of hazardous waste activity is the key to consistent and reliable hazardous waste information. These projects must make every effort to provide information suppliers with clear and accessible training and guidance to support consistent interpretation and characterization of hazardous waste activity.

4.4 CURRENT SOURCES OF INFORMATION

Exhibit 4-1 provides a brief description of the information sources identified, their owner, overall reliability and accessibility rating, and group(s) using the source. The sources listed are grouped as follows: Agency wide sources, locally available sources, program and regulatory requirements sources, commercial and other government sources, and science and engineering sources. The reliability and accessibility rating was on a scale of high (H), medium (M), low (L), or no opinion/undecided (X). A highly reliable source is one that provides data that the user accepts and trusts. A source rated low for reliability provides data that does not represent real world values and must be verified against another source of

information. A highly accessible source means that a user can quickly and easily obtain data directly from the source. A source rated low for accessibility means that an unreasonable level of effort is required to obtain the data. In addition, Exhibit 4-2 provides a subset of the major information sources, a description of how the information source can be accessed, and the person to contact for access.

Current Data Source	Description	Owner	Reliability	Accessibility	Group(s) using the Source
AGENCY INFORMATION SOURCES					
Biennial Reporting System (BRS)	Contains information on waste generation, management, management capacity, and minimization information for RCRA large-quantity generators and for treatment, storage, and disposal facilities subject to RCRA permitting requirements. BRS datasets can be accessed via the Internet.	EPA HQ: OSW	M	L	Regions 3, 9,10 CIRMD-RCRA Hotline (H) CIRMD-Information Mgmt Branch (I) EMRAD HWMMD-Analysis and Information Branch (A) HWMMD-Waste Treatment Branch (L) HWMMD-Waste Minimization Branch (W) OECA-Office of Regulatory Enforcement (OR) PSPD-Federal, State, Tribal Programs Branch (ST)
Comprehensive Environmental Response, Compensation and Liability Information System (CERCLIS/CERCLIS3)	Functions as the Superfund database that contains information on hazardous waste sites from initial discovery to listing on the National Priorities List.	EPA HQ: Office of Solid Waste and Emergency Response (OSWER) (Superfund)	M	L	HWID HWMMD-A PSPD-Corrective Action Branch (CA)

*In terms of reliability and accessibility, H means high, M means medium, L means low, and X signifies no opinion.

Exhibit 4-1. Overview of Current Systems Used to Support the EPA Hazardous Waste Program

Current Data Source	Description	Owner	Reliability	Accessibility	Group(s) using the Source
CLU-IN	Serves as an information exchange bulletin board system that provides for the exchange of information on programs operated by OSWER. These programs include the solid and hazardous waste program, the underground storage tank program, emergency preparedness and prevention program, and the emergency response and remediation program.	EPA HQ: OSWER	X	X	CIRMD-H
ENVIROFACTS	Functions as a relational database that integrates data extracted from five major EPA program systems: AIRS/AFS, CERCLIS, PCS, RCRIS, and TRIS.	EPA HQ: OIRM	X	L	CIRMD-H
Enviroene Bulletin Board System	Is an electronic library of regulatory data and educational information on pollution prevention (P_2), technical assistance, and federal facilities environmental compliance and enforcement.	EPA HQ: ORD, OECA, DOE, and DOD	H	M	HWMMD-W OECA-OR OECA-Office of Site Remediation Enforcement (OS)
EPA Locator	Used as a personnel locator. Provides such information as name, office, and telephone number.	EPA HQ	H	M	CIRMD-I
Emergency Response Notification System (ERNS)	Contains information on specific notifications of releases of oil and hazardous substances.	EPA HQ; OSWER, OERR, ERD	X	X	HWMMD-W
Facility Index System (FINDS)	Provides basic information about facilities regulated by EPA and identifies sources of more detailed information.	EPA HQ: OIRM	L	L	PSPD-CA
GATEWAY/GIS	Provides spatial data, including geographic and demographic data.	EPA HQ: OIRM	H	H	Regions 3,10 EMRAD
Integrated Data for Enforcement Analysis System (IDEA)	Used as a cross-media enforcement case management tool.	EPA HQ: OECA	M	L	OECA-Office of Compliance (OC) OECA-OR

*In terms of reliability and accessibility, H means high, M means medium, L means low, and X signifies no opinion.

Exhibit 4-1. Overview of Current Systems Used to Support the EPA Hazardous Waste Program (continued)

Current Data Source	Description	Owner	Reliability	Accessibility	Group(s) using the Source
National Enforcement Investigation Center (NEIC)	Provides facility enforcement and hazardous waste import/export information.	NEIC	M	M	HWID HWMMD-A OECA-OR
Permit Compliance System (PCS)	Tracks permit, compliance, and enforcement status of NPDES facilities. Keeps records on approximately 75,000 water discharge permit holders including inventory, discharge limit, discharge monitoring, and non-compliance information.	EPA HQ: Office of Water (OW)/OECA	X	X	OECA-OC
Records of Decision System (RODS)	Tracks site cleanups under the Superfund program and to justify the type of treatment chosen at each site. Also stores information on the technologies being used to clean up sites.	EPA HQ: OERR and OSWER	M	L	HWMMD-A PSPD-CA
Resource Conservation and Recovery Information System (RCRIS)	Contains information on handler, permitting, corrective action, and compliance activities for RCRA hazardous waste handlers. RCRIS datasets can be accessed via the Internet.	EPA HQ: OSW/OECA	M	L	Regions 3, 9, 10 CIRMD-H,I HWMMD-A,L OECA-OC,OR,OS PSPD-CA PSPD-Permitting Branch (PM)
Toxic Release Inventory System (TRIS)	Tracks information on facility and substance identification, environmental chemical release, offsite waste transfer, and waste treatment/minimization information. Tracks amounts on more than 300 listed toxic chemicals that facilities release directly to air, water, or land or transport (transfer) offsite.	EPA HQ: OPPT	L	L	Regions 9, 10 CIRMD-H HWID HWMMD-W OECA-OC, OR

*In terms of reliability and accessibility, H means high, M means medium, L means low, and X signifies no opinion.

Exhibit 4-1. Overview of Current Systems Used to Support the EPA Hazardous Waste Program (continued)

Current Data Source	Description	Owner	Reliability	Accessibility	Group(s) using the Source
LOCAL INFORMATION SOURCES					
CodeTalk	Functions as an information-sharing network for and about Native Americans.	Department of Housing and Urban Development (HUD): Office of Information Policies and Systems	H	H	PSPD-ST
Corrective Action Instrument Tracking System (CAITS)	Provides a mechanism for tracking corrective action activity.	EPA Region 3	M	L	Region 3
Federal/State/Tribal Programs Branch Bulletin Board System (FSTPB-BBS)	Contains information on areas, including regulations and policy.	PSPD-ST	M	M	Regions 3, 9
Ground Water Information Tracking System (GRITS)	Contains ground water monitoring data with statistical capability and RCRA Subtitle D and C site, facility, and constituent information.	PSPD-ST	M	L	PSPD-CA
HWIR Process/Waste DB	Contains information on waste streams, volumes, quantities, waste codes, constituents, and concentrations per facility.	EPA HQ: EMRAD	H	H	EMRAD
INDIANnet	Designed to provide information from the federal and other levels to Native Americans.	Americans for Indian Opportunity	H	H	PSPD-ST
Industry Studies Database (ISDB)	Provides facility specific information on waste generating production processes, the characteristics of wastes, and waste management units.	Commercial	M	M	EMRAD HWID HWMMD-A PSPD-PM

*In terms of reliability and accessibility, H means high, M means medium, L means low, and X signifies no opinion.

Exhibit 4-1. Overview of Current Systems Used to Support the EPA Hazardous Waste Program (continued)

Current Data Source	Description	Owner	Reliability	Accessibility	Group(s) using the Source
OMBUDSMAN (OMBUDDY)	Tracks information on anonymous phone calls received by type, area, and program.	EPA-OSWER-OMBUDSMAN	X	L	CIRMD-H
Remedial Options (REOPT)	Contains information on remedial actions technology and constituent and environmental regulations.	Department of Energy (DOE)	H	H	PSPD-CA
RCRIS Quicklook	Provides a user-friendly interface for reviewing information extracted from RCRIS.	EPA Region 9	M	M	Region 9
State Authorization Tracking System (STATS)	Contains information on which states are authorized for what activities.	EPA HQ: OSW (PSPD)	H	L	Region 9 PSPD-ST
PROGRAM POLICY AND REGULATORY INFORMATION SOURCES					
Beginning Year Plans (BYPs)	Documents regional activities for the coming fiscal year based on the RCRA Implementation Plan (RIP).	EPA HQ: OSW (PSPD)	M	M	OECA-OC,OS PSPD-PM,ST
Codes of Federal Regulations (CFR)	Listings of the general and permanent rules published in the Federal Register (FR) by the executive departments and agencies of the federal government.	Office of the Federal Register National Archives and Records Administration	H	H	Regions 3, 9, 10 CIRMD-H,I EMRAD HWID HWMMD-A,L,W OECA-OC,OR,OS PSPD-CA,PM,ST
Enforcement Docket (DOCKET)	Contains information related to civil judicial enforcement activity, including case information, facility information, and defendant information.	EPA HQ: OECA	M	L	OECA-OC,OS

*In terms of reliability and accessibility, H means high, M means medium, L means low, and X signifies no opinion.

Exhibit 4-1. Overview of Current Systems Used to Support the EPA Hazardous Waste Program (continued)

Current Data Source	Description	Owner	Reliability	Accessibility	Group(s) using the Source
Federal Register Notices	Contains information on regulations and proposed regulations.	EPA HQ: OSW/OECA	H	H	Regions 3, 9, 10 CIRMD-H,I HWMMD-A,L,W OECA-OC,OR,OS PSPD-CA,PM,ST
RCRA Permit Policy Compendium (PPC)	Functions as a reference for regional and state permit writers on permitting policies and procedures.	EPA HQ: OSW (PSPD)	M	M	Region 9 CIRMD-H HWMMD-L OECA-OC PSPD-CA,PM,ST
Pollution Prevention Information Center (PPIC)	Provides industry fact sheets and other general pollution prevention information.	Pollution Prevention Division (PPD)	X	L	HWMMD-W
RCRA Docket	Provides references on rulemakings that deal with RCRA.	EPA HQ: OSW (CSB)	H	L	CIRMD-H HWID HWMMD-L OECA-OC PSPD-PM,ST
RCRA Docket System (RCRADS-SEEK)	Stores, retrieves, and displays key information about OSW regulatory documents and publications at the RCRA Information Center.	EPA HQ: OSW (CSB)	H	H	CIRMD-RCRA Docket (D)
COMMERCIAL AND OTHER GOVERNMENT INFORMATION SOURCES					
Dun and Bradstreet	Provides information on companies, such as economic profile, business size, and annual reports.	Dun and Bradstreet	M	M	Regions 9, 10 EMRAD OECA-OC,OR

*In terms of reliability and accessibility, H means high, M means medium, L means low, and X signifies no opinion.

Exhibit 4-1. Overview of Current Systems Used to Support the EPA Hazardous Waste Program (continued)

Current Data Source	Description	Owner	Reliability	Accessibility	Group(s) using the Source
Greenwire	Serves as a source of current environmental news.	EPA HQ	H	H	OECA-OR
LEXIS	Is a full-text legal information service.	Reed Elsevier Inc.	H	H	OECA-OR,OS
National Technical Information Service	Provides access to software, datafiles, and databases produced by federal agencies.	U.S. Department of Commerce	X	L	CIRMD-H
RTKNet	Is the Right to Know computer network bulletin board system.	UNISON Institute and OMB Watch	X	L	CIRMD-H
SCIENCE AND ENGINEERING INFORMATION SOURCES					
Alternative Treatment Technology Information Center (ATTIC)	ATTIC is a comprehensive computer database system providing up-to-date information on innovative treatment technologies and access to other databases to assist in determining hazardous waste clean-up alternatives.	EPA Cincinnati: National Risk Management Research Laboratory (NRMRL)	M	M	CIRMD-H PSPD-CA
Environmental Monitoring Methods Index (EMMI)	Contains information on 2,600 regulated chemical substances, which are identified on 50 statutorily mandated and office-based lists and more than 900 analytical methods.	OW Regulations and Standards, Office of Science and Technology	M	M	EMRAD
Health Effects Assessment Summary Tables (HEAST)	Summarizes toxic effects of individual chemicals and also provides unverified health benchmarks for certain carcinogens and non-carcinogens.	EPA in Cincinnati: Office of Research and Development (ORD), Office of Health and Environmental Assessment	H	M	CIRMD-H EMRAD

*In terms of reliability and accessibility, H means high, M means medium, L means low, and X signifies no opinion.

Exhibit 4-1. Overview of Current Systems Used to Support the EPA Hazardous Waste Program (continued)

Current Data Source	Description	Owner	Reliability	Accessibility	Group(s) using the Source
Integrated Risk Information System (IRIS)	Provides detailed information on chemicals and EPA consensus opinion on potential chronic human health effects related to chemical hazard identification and dose-response assessment.	EPA in Cincinnati: ORD, Office of Health and Environmental Assessment	M	L	CIRMD-H EMRAD HWID PSPD-CA

*In terms of reliability and accessibility, H means high, M means medium, L means low, and X signifies no opinion.

Exhibit 4-1. Overview of Current Systems Used to Support the EPA Hazardous Waste Program (continued)

RCRIS/BRS Data Source	Contact	Web URL (if applicable)
IDEA-WIN	1-888-EPA-IDEA	Available from EPA Wide Area Network (VABS)
RTK-NET	(202) 234-8494	www.rtk.net
ENVIROFACTS	None provided	www.epa.gov/enviro/html/ef_home.html
Environmental Factors CD-ROM (NTIS)	Fax Back (703) 487-4140 Code = 8679	www.ntis.gov

Exhibit 4-2. Some Sources for RCRIS and BRS Data

5.0 POTENTIAL TECHNOLOGIES AND EVALUATION CONSIDERATIONS

To identify the information management requirements of each Program Area, EPA and the states must integrate their information strategy efforts and analyze the specific information management requirements of each program area. The state and EPA PAA projects will define the information management requirements, roles, and responsibilities of the states and EPA organizations. Each PAA effort will document such information requirements such as: the types of data, the quantity of data, who creates the data, and how data are shared or transferred among organizations and users. Specific information technologies cannot be chosen or properly evaluated at this stage because they must be evaluated within the context of the requirements defined for each Program Area.

This chapter describes some of the technologies likely to be considered based on EPA's current knowledge of the hazardous waste program and proposes criteria that may be useful when evaluating the suitability of these and other future technologies. The primary sections in the chapter address these topics:

This chapter addresses the following:

- Key questions answered by this chapter.
- Key findings of this chapter.
- General criteria that EPA should consider when evaluating technologies.

5.1 KEY QUESTIONS

What are some information technologies that can potentially improve EPA's ability to satisfy its hazardous waste information needs?

What characteristics should be considered when evaluating technologies?

5.2 KEY FINDINGS

- Hazardous waste information technologies will need to accommodate the broad range of technology and information requirements of the hazardous waste program stakeholders: EPA, states, tribes, industry, and the public.
- Hazardous waste information technologies will need to be user friendly and support broad sharing and accessibility of information.
- Hazardous waste information technologies will need to support a variety of automated information collection methods.

- Hazardous waste information technologies will need to facilitate the integration of information from many sources.

- Any information technologies being considered for the EPA hazardous waste program will need to be evaluated against a set of criteria that reflects user requirements.

5.3 DISCUSSION

Many of the information needs identified for the hazardous waste program are supplied either directly or indirectly by the implementers of the hazardous waste program (states, tribes, and EPA regions). In fact, information for a specific hazardous facility can be supplied by the facility, the state environmental agency implementing a portion of the hazardous waste program, and the EPA region implementing a portion of the program.

To effectively and efficiently integrate and consolidate information for access by all stakeholders, the hazardous waste information technologies will need to support the collection of information from a variety of stakeholders who use a wide range of technologies.

Specific technology choices cannot be made without evaluating appropriate technologies based on the particular requirements defined for each Program Area. Each PAA effort will need to document the specific information management requirements that must be satisfied by the chosen technologies. As a result, EPA determined that a detailed technology assessment could only be conducted after PAA projects have identified their information management requirements.

5.3.1 Potential Technologies

Based on historical experience in hazardous waste information management, EPA compiled the following list of technologies that may potentially meet some needs for hazardous waste information management:

- Automated telephone registration (ATR).
- Machine readable forms technologies.
- Document faxback system.
- CD-ROM technologies.
- Electronic reporting software (ERS) and on-line reporting (OLR).
- Electronic data interchange (EDI).
- Electronic bulletin board systems (EBBS).
- Relational data base management system (RDBMS).
- Internet/Intranet Web Servers and Hypertext Markup Language (HTML).
- Geographic information systems (GIS).
- Data warehousing.

The selected technologies address the major information management activities of information collection, information integration, and information dissemination.

Again, this is a preliminary list of technologies that would need to be assessed within the context of the specific information support requirements developed by EPA and hazardous waste program stakeholders during PAA. It is important that any technology or suite of technologies be thoroughly researched and verified with the RCRA stakeholders prior to selection. EPA realizes that additional technologies may need to be added to the list. The Agency also realizes that some of these technologies are already in use and support a specific niche in certain Program Areas.

Automated Telephone Registration (ATR)

ATR systems guide users through a fixed set of voice and telephone keypad response choices, enabling the user to report and/or request basic information. A respondent could call a telephone number and, using the key pad on the phone, type in alpha and numeric responses, which would then be entered into and stored in a database. This technology would support only a very limited or basic data collection effort.

Machine Readable Forms Technologies

Regulated facilities could report information using a form-driven submission process. Although the submission itself is not electronic, the data on the forms can be entered automatically into a database by sending the forms through an optical character recognition (OCR) reader. An OCR reader performs the following tasks:

- An OCR device, connected to a computer, electronically scans text and numeric information from a hard copy document.
- Interpretation software converts each character into an electronic format.
- A recording program then identifies the fixed location of the character on the paper form and associates it with a particular data field. Edits can be programmed into the system to verify data completeness and validity on the hard copy form.

Document Faxback System

Faxback technology is a method that allows information to be disseminated via fax to any stakeholder requesting information. A requestor can call a designated telephone number that will provide access to a RCRA faxback system. By following a few steps, the caller could request RCRA information (e.g., reports) that will then be sent back to his/her fax machine or modem. Callers without access to a fax machine or fax modem cannot use this technology.

CD-ROM Technologies

A CD-ROM publication is an evolved version of a hard copy publication. More and more documents and data sources are being published on CD-ROM because of its capability to store large volumes of information and to support retrieval and analysis of fielded data. A very large publication, one that is too large to fit on a single CD-ROM, could require multiple CDS (e.g., the publication could be divided into sections so that each CD-ROM in the set contains data from one or two states).

Relevant publications could be copied periodically to CD-ROM and the data organized so that any standard database application could be used to query and analyze the documentation. The CD-ROM could be made available to the public through the National Technical Information Service or through the Emergency Planning and Community Right-to-Know Document Distribution Center.

Electronic Reporting Software (ERS) and On-line Reporting (OLR)

ERS and OLR allow reporters to compile their reports using form-driven interactive software. For both of these technologies, organizations or individuals enter information assimilated from existing records using interactive software that supports context sensitive help, response validation, report viewing, and report evaluation. The two technologies differ in two areas. ERS runs on the reporter's local computer, and OLR software runs on a remote computer that must be accessed via a telecommunications connection. In addition, ERS reports must be transmitted to the collector using telecommunications access or on magnetic media, and OLR reports are functionally instantaneous. Cutting edge technologies, such as Sun Microsystems' Java scripting, also support hybrid variations of ERS and OLR.

Electronic Data Interchange (EDI)

EDI is a set of formal technical specifications and procedures for the electronic transmission of business transactions. EDI allows reporting directly from a reporter's existing data system. Information is transmitted to the collector via a commercial network. The EDI foundation is the use of standardized transaction specifications that can be processed using commercially available EDI translation software over commercial EDI networks.

The following must be achieved to implement EDI:

- Specifications for the EDI transaction set will need to be developed to satisfy the information reporting requirements.

- The transaction set specifications will need to be submitted to a national EDI standards committee that certifies compliance and publishes the specifications for use by commercial EDI software developers.

- Participating reporters will need to purchase EDI translation software, develop software to extract the transaction information from their database and map it to the EDI translator database, and contract for transaction clearing services through a commercial carrier.

- Agencies accepting EDI transactions will need to purchase EDI translation software, develop software to extract the information from the EDI translator and map it to the agency database, and contract for transaction clearing services through a commercial carrier.

Electronic Bulletin Board Systems (EBBS)

The EBBS is a technical option that allows information to be disseminated to or from the desktop electronically. This technology eliminates the need to transfer disks or other media back and forth in order to integrate information into a database system.

An EBBS typically resides on a centralized PC that can be accessed by a variety of users. Access to an EBBS is relatively easy and requires limited hardware and software. An EBBS can be made available through a centralized toll or toll-free number to a single or multi-user line connected to the EBBS PC. The number of simultaneous user calls is limited to the number of available telephone lines. An EPA EBBS (e.g., Technology Transfer Network, Enviro$ense) typically has multiple telephone lines.

The EBBS could be set up to allow users to upload information, which could be incorporated into a database. The EBBS could then act as an OLR system that would allow users to view, or request for download, information stored in the database.

Relational Data Base Management System (RDBMS)

RDBMS is a database organization scheme that treats files as tables of data in which the rows represent records and the columns represent fields. In a RDBMS, some data items in one type of record can refer to records of a different type. Relational databases give the user the flexibility to link information stored in many separate files and to interchange and cross-reference information between two different record types. RDBMS applications provide an integrated suite of software applications used to develop database systems that manipulate data organized in cross-referenced tables. Most full-scale RDBMS applications provide tools to develop table structures, data maintenance applications, ad-hoc queries, and standard reports.

RDBMS technology, the most widely used and understood database technology, supports flexible integration and dissemination of RCRA information. EPA's Enterprise Technology Services Division is endorsing RDBMS technology and the use of RDBMS packages, such as ORACLE.

Internet/Intranet Web Servers and Hypertext Markup Language

The Internet is an interconnected network of computers that provides an infrastructure to enable millions of people to communicate and share information electronically. Individuals can access the Internet in various ways:

- An on-line service (e.g., America Online™, Compuserve™, Prodigy™) provides Internet access to users, in addition to providing other services. On-line services charge users for Internet access based on usage, much like telephone long-distance calls.

- Some local providers sell unlimited Internet access to users for a single monthly fee.

- Many companies, government agencies, and other organizations have established networks with Internet connections. Employees and other individuals with access to these networks need only a Web browser (software that supports browsing information on the Internet) and authorized access to the Internet.

An EPA Internet server could also house static RCRA information (e.g., documentation, images, data, downloadable files). Static information is the most common form of data on the Internet today.

HTML offers an electronic publishing standard that allows electronic text and graphic images to be uniformly accessed and displayed by a broad range of commercially available browser applications. HTML integrates information display standards and dynamic linking to other files referenced within a document. HTML browsers request HTML documents from the Web servers, which transfer the requested documents and pass information requests to other applications accessible from the server.

Web server technology provides a communications gateway that services browser requests for HTML documents. The Web server can provide interactive access to electronic text, images, structured databases, and software applications. In addition, the Web server can deliver access to cross-referenced information from any computer connected to it via closed networks or the Internet.

Natural language search engines provide efficient access to the diverse information available on the Web. A natural language search engine allows users to create English-like queries to identify and access all information available on the server for a user-specified topic(s).

Geographic Information Systems (GIS)

GIS provides access to structured data organized by physical location expressed in latitude, longitude, and elevation. GIS technology allows diverse data from a variety of sources to be dynamically grouped and/or aggregated based on the shared locational context of the information. Given the necessary locational information, GIS can dynamically group information for any conceivable three-dimensional boundary, such as a hazardous waste management unit, corrective action area, facility, river, lake, wetland, or state. GIS easily accommodates information access and presentation using graphically displayed geographic maps.

Data Warehousing

A data warehouse is a managed database that consolidates information from disparate databases, keeps the information current, and structures it for decision-support queries. Data warehouses support the shift from application-oriented data (e.g., data designed to support application processing) to decision-support data (e.g., data designed to aid in decision making). Data warehouses are generally created to consolidate application-oriented data from different legacy systems. The data from these systems are probably in different formats and encodings. New data are always appended to the database, rather than replaced, and the database continually absorbs new data, integrating the new with the previous data.

5.3.2 Evaluation Considerations

User requirements must be taken into consideration when evaluating any set of technologies for a particular information management problem. For assessment purposes, these requirements can be expressed as evaluation criteria. EPA has developed an initial list of general evaluation criteria that can be used to compare and contrast the advantages and disadvantages of specific technologies:

- Reliability.
- Accessibility.
- Cost.
- Flexibility.
- Portability.
- Useability.
- Infrastructure compatibility.
- Telecommunications requirement.
- Processing requirement.
- System security.

- Electronic media information access.
- Scalability.
- Historical record keeping.

Each criterion is described below.

Reliability

Technologies should have market stability in terms of a mature product, high level of user support, and a high level of market penetration. This criterion is important because implementation of a stable technology helps to reduce costs in the long run (e.g., a stable pool of programming resources exists to provide support, manufacturer will continue to provide support). Trade journals and/or other sources, such as Internet, can be examined for information on the various technologies. The technologies can be ranked as follows:

- High: All sources give a positive review (e.g., there is a consensus that the product is stable, offers a high degree of user support and documentation, and has high market penetration).

- Medium: Some sources give a positive review.

- Low: One or no source gives a positive review.

Accessibility

The technology should be easily available to the Agency and, where applicable, states, the regulated community, and the public. For EPA, the hardware, software, and telecommunications components should be accessible in terms of their availability on the General Services Administration (GSA) schedule and the support they are given by the Enterprise Technology Services Division (ETSD). In addition, the hardware and software should not be cost prohibitive. The rankings for this criteria are as follows:

- High: The technology is currently available. The technical solution for delivering information is available through existing EPA hardware and software contracts.

- Medium: The technology is not currently available through existing EPA hardware and software contracts, but there are plans to make it available.

- Low: The technology is not available through existing EPA hardware and software contracts, and there are no plans in place to make it available.

Cost

Several costs are associated with each potential technical option, which should not be ranked (high/medium/low) like the other criteria. The major expenditures can be divided into four cost categories:

- Maintenance Cost: The cost of keeping a system running at a uniform level of operation.
- Operational Cost: The day-to-day cost of running the system. Each technical option will be evaluated for operational cost.
- Transition Cost: The expense of converting from an existing system (e.g., RCRIS) to a new system that conforms to the technical option being reviewed. Transition costs include data conversion from old systems, installation, parallel operations support, and user training.
- Development Cost: The initial capital cost for software programming and equipment purchases necessary to deliver full scale implementation of the technology.

Cost should be evaluated as a relative factor (e.g., compare costs of the various options).

Flexibility

Technical options should be flexible enough to handle reporting or querying requirements from different entities, such as states, regions, and headquarters. The rankings are as follows:

- High: Accommodates ad hoc reporting, custom screens, new business needs (new fields or calculations).
- Medium: Accommodates some flexibility for the user.
- Low: No flexibility. User can only access the query or reporting capabilities built into the system.

Portability

Software products (i.e., either commercially available or developed by EPA) should be useable on many different computing platforms with many different operating systems (e.g., UNIX and MS DOS based systems). This criterion is important because it takes into account the

diverse hardware and software capabilities of EPA, the states, and the regulated community. The rankings are as follows:

- High: Portable to all major platforms (e.g., IBM PC, UNIX workstations and servers [Data General and SUN], IBM Mainframe).
- Medium: Portable to more than one major platform.
- Low: Only useable on one major platform and usually considered proprietary.

Useability

This criterion examines the extent to which users can easily access and work with the technology. For example, software products should be available on the user's desktop with a single, simple user interface, such as Graphical User Interface (GUI). Similar to the flexibility criterion, a high ranking here indicates that the technology solution is easy to use. The rankings are as follows:

- High: The technology is very easy to use and is available on the desktop via a common interface to the information (e.g., GUI).
- Medium: The technology is moderately easy to use and may have more than one interface to the information.
- Low: The technology is difficult to use, is not available on the desktop, and several interfaces are required for access to the information.

Infrastructure Compatibility

This criterion looks at how compatible the system will be to the way states, regions, and headquarters do business. The rankings for this criterion are as follows:

- High: Completely compatible with existing needs.
- Medium: Meets most needs.
- Low: Not compatible with the way business is currently conducted.

Telecommunications Requirement

This criterion examines the types of telecommunication requirements (e.g., hardware, software) needed to support a technology solution. The criterion is examined because it provides another type of indicator of the resources needed to support a chosen technology.

The current EPA and state telecommunication structure should be able to handle the technology and should allow for expanding technology needs. The rankings are as follows:

- High: Less than 56KB capacity required.
- Medium: Less than T1 capacity but greater than 56KB required.
- Low: T1 line and high performance local area network (LAN) required.

Processing Requirement

The computing platforms should be adequate for the processing load. Poor or inadequate computers will limit system response. If there is more than one computational platform in the system, the heaviest processing should take place on the most powerful platform when possible. The rankings for this criterion follow:

- High: Low end workstation or PC.
- Medium: Server.
- Low: High end server or mainframe.

System Security

To ensure that users can or cannot access or alter sensitive or otherwise restricted information, system security needs to be implemented. The technology should allow or limit access to information by category or user at the database, record, or field levels. The following rankings apply to this criterion:

- High: The technology is mature and has very robust mechanisms to enforce security (e.g., Resource Access Control Facility on an IBM mainframe).
- Medium: The technology is moderately robust and mature (e.g., Internet firewalls).
- Low: The technology is not mature or robust and is very limited (e.g., passing information via diskette).

Electronic Media Information Access

The technical option should allow for access to other database systems (e.g., Facility Index System [FINDS], ENVIROFACTS). This criterion addresses EPA's requirement to identify technologies that facilitate the integration of information from the various Agency and other relevant information sources. The rankings for this criterion are as follows:

- High: The technical solution facilitates access to other Agency and commercial databases. The solution can handle all known media, including audio, video, images, and text.
- Medium: The technical solution can provide limited access to other Agency and commercial databases. It can handle more than one known medium.
- Low: The technical solution can handle text only.

Scalability

It should be possible for an application to operate identically on all platform sizes (e.g., PC, mainframe, UNIX workstation). This criterion can be ranked as follows:

- High: Operates on all platforms (e.g., PC, mainframe, UNIX server, or workstation).
- Medium: Operates on more than one platform.
- Low: Operates on only one platform.

Historical Record Keeping

Technical options should provide support for the retrieval of historical information. This criterion addresses EPA's evolving evaluation role, which requires historical information to conduct trends analyses. The following rankings are applicable to this criterion:

- High: A large capacity of historical information is available online.
- Medium: A medium capacity of historical information is available online. Some information may need to be retrieved from archival holdings.
- Low: All historical information is archived (or is not available) and difficult to access. Only current information is available online.

6.0 PROGRAM AREA PRIORITIZATION AND RECOMMENDATIONS

Chapter 6 outlines how EPA took the key findings of the previous chapters and incorporated them into an analysis of the seven Program Areas to determine which Program Areas have the highest strategic importance or need the most immediate improvements. This discussion provides a prioritization for EPA's next steps. In addition, the chapter analyzes a variety of short-term projects based on the strategic importance of their respective Program Areas, the need to enhance the reliability and accessibility of current information systems, and other external and internal Agency influences currently impacting activity in the EPA RCRA program. The chapter also reviews options and recommends priority projects.

This chapter addresses the following:

- Key questions answered by this chapter.
- Key findings on overall prioritization of Program Areas and short-term projects.
- Discussion of an overview of Program Area prioritization, an evaluation of each Program Areas in terms of strategic importance to the EPA hazardous waste program and its level of current systems support, and an identification of short-term projects based on Agency program directions and influences.

6.1 KEY QUESTIONS

Which Program Areas need to be analyzed first?

Which Program Areas have the highest strategic importance?

Which Program Areas have information needs requiring the most improvement?

What are the external and internal Agency influences that may affect Program Area priorities?

Do the Program Area priorities change based on these factors?

What short-term projects have been identified in response to external and internal Agency program influences?

6.2 KEY FINDINGS

- EPA prioritized the Program Areas, using a two-step process. First, EPA evaluated and ranked each of the Program Areas based on the results of the Program Assessment and Current Systems Assessment from this ISP. Second, EPA examined the Program Areas against major external and internal Agency influences (e.g., Key Identifier Initiative, burden reduction) and evaluated whether the relative rankings of the Program Areas would change.

- Basing the evaluation on the results of the ISP, the top three Program Area priorities are 1) *Program Implementation*, 2) *Program Evaluation*, and 3) *Information Sharing*. *Program Evaluation* and *Information Sharing* have equal priority.

- The relative rankings of the top three Program Areas are not changed by the external and internal Agency program influences. However, the program influences do give rise to a number of short-term projects. EPA evaluated various ongoing information-related short-term projects and found they were consistent with the top three Program Areas and may have some resource implications that will need to be considered.

6.3 DISCUSSION

EPA prioritized the Program Areas, using a two-step process: 1) evaluating the Program Areas based on the results of the Program Assessment and Current Systems Assessment from this ISP and 2) evaluating the Program Areas based on other external and internal Agency program influences. EPA performed this prioritization for two reasons:

- A key premise of the IEM is that one cannot analyze a complex set of interrelated Program Areas simultaneously and capture all information management requirements in a systematic way. Instead, one needs to identify the high priority Program Areas and sequence them so that the results of analyzing one Program Area can be used as input into the analysis of subsequent Program Areas, thereby leading to an integrated set of systems.

- Limitations in resources also prevent EPA from analyzing Program Areas simultaneously. Using existing and projected resources, EPA must identify the most important Program Areas and analyze them first in the next implementation phase of this project.

The prioritization of Program Areas based on the first step is discussed directly below in Sections 6.3.1 (Overview) and 6.3.2 (Detailed Analyses). Each Program Area is presented in terms of its strategic importance and level of current systems support. Section 6.3.3 (Evaluation of Program Areas) addresses the second step, evaluating prioritization results of the first step with respect to major Agency external and internal influences, such as the Key

Identifier Initiative, One-stop Reporting Initiative, public access improvements, burden reduction, and GPRA. This section also discusses the short-term information management projects initiated as a result of these Agency program influences and shows how they fit into the overall results of this ISP.

6.3.1 Overview of the Program Area Prioritization Based on Strategic Importance and Level of Current Systems Support

For the purposes of this analysis, the first factor, strategic importance, is defined as the extent to which each Program Area addresses the goals and strategies identified in Chapter 2 and the way in which each Program Area fits into the strategic vision of senior RCRA managers. The activities of a Program Area of high strategic importance create information needed to address a significant part of the EPA program vision. By addressing a Program Area of high strategic importance, EPA will work toward delivering information critical to meeting EPA's program vision.

The second factor that EPA examined for each Program Area is the level of current systems support. The results were discussed in the Current Systems Assessment (Chapter 4). Current systems support is defined as the degree to which the existing network of information sources delivers the information needed to support the activities and information that comprise the Program Area. A Program Area that has a high level of current systems support allows users to implement the activities and access sources that can meet their information needs. A Program Area that has a low level of current system support suggests the need for improvement.

Exhibit 6-1 summarizes the results of the evaluation of each Program Area against both the strategic importance and the level of current systems support. Priority determinations, given as overall rankings, were made based on a combination of strategic importance and the need for improved information and/or sources. For example, a Program Area of high strategic importance but with limited information systems support (both automated and non-automated) would be identified as a top priority for further analysis. Conversely, a Program Area that has high strategic importance but has its information needs generally met would rank as a lower priority. Similarly, a Program Area of moderate strategic importance that has many unmet information needs may be ranked relatively high. Section 6.3.2 presents a detailed analysis of strategic importance and current systems support by Program Area. Appendix I provides additional detail that explains how EPA assigned numerical point values to the strategic importance and current systems assessment factors and developed relative rankings of the Program Areas.

PROGRAM AREAS	STRATEGIC IMPORTANCE	CURRENT SYSTEMS		OVERALL RANKING	COMMENTS
		RELIA-BILITY	ACCESS-IBILITY		
Program Implementation	H	M	M/L	1	This Program Area is of high strategic importance because it generates the information needed by many of the other Program Areas.
Program Evaluation	H	M/L	L	2	This Program Area is of equal importance relative to the *Program Implementation* in its focus on the fundamental information needed to perform program oversight, whether measuring program activities or true environmental results. This Program Area lacks adequate current systems support.
Information Sharing	H	M	L	2	This Program Area provides the technology infrastructure to deliver information to the other Program Areas. It is also a candidate Program Area for identifying specific short-term projects that address information access.
Program Development	M	H/M	M/L	3	This Program Area creates information about regulatory and nonregulatory programs. It should be addressed after Program Evaluation because of the dependency of information.
Program Management	M	M	M	4	This Program Area focuses on strategic planning, budgeting, and partnerships. It does not, however, address key points relevant to the program vision. The current level of systems support was more satisfactory than for other Program Areas.
Studies and Research	L	M	L	5	This Program Area strategically is not as high as several other areas because it addresses only a limited number of management views and strategies. However, it does address a key issue, which is the need to develop and deliver accurate risk information. The information from this Program Area is used as input into other Program Areas, such as Program Development. This Program Area has inadequate current systems support. Hence, some consideration may be given to placing it higher in the ranking of Program Areas.
Program Implementation Support	L	M	M	6	This Program Area addresses some aspects of the EPA hazardous waste program strategic vision. The level of current systems support is more adequate, however, relative to other Program Areas. This Program Area may be a candidate for certain short-term projects.

Exhibit 6-1. Prioritization of the EPA Hazardous Waste Program Areas

Strategic Importance: (H)igh means that the Program Area contains information that is important to achieving a significant portion of the EPA program vision, i.e., it addresses eight or more goals, strategies, and executive views. (M)edium means that the Program Area contains information that addresses relatively fewer points of the program vision,; i.e., it address five to seven goals, strategies, and executive views. (L)ow means that the Program Area contains information that addresses relatively few points of the program vision, i.e., it address four or fewer goals, strategies, and executive views.

Level of Current Systems Support: (H)igh reliability means the information sources supporting the Program Area provides information that program staff accept and trust. (M)edium reliability means that program staff need to occasionally verify the information. (L)ow reliability means that the information sources do not provide information that reflects the real world and program staff must always verify the data. (H) accessibility means that program staff can quickly and easily obtain data directly from the source. (M) accessibility means that program staff either have some time delays in accessing the information source or have some difficulties in using it. (L)ow accessibility means that program staff must spend an unreasonable level of effort to access and obtain information from the information sources.

Overall Ranking: (1) means the highest relative ranking based on number of goals, strategies, and executive views addressed and a low level of current systems support, and (6) means the lowest relative ranking based on a low number of goals, strategies, and executive views addressed and relatively higher level of current systems support. Note that overall ranking was primarily driven by the number of points assigned for strategic vision and then adjusted, as required, based on level of current systems support.

Using the strategic importance and current systems support analyses, EPA ranked priorities among the Program Areas as follows:

1. *Program Implementation*
2. *Program Evaluation and Information Sharing* (tied)
3. *Program Development*
4. *Program Management*
5. *Studies and Research*
6. *Program Implementation Support*

Comparison of EPA's Program Areas with State ISP Program Areas

After developing its priority ranking of Program Areas, EPA found it useful to compare the Agency's priorities against those priorities identified in the state ISP. EPA found that, although the EPA Program Areas and the state Program Areas are not identical, the top priorities for both EPA and the state overlap to a large degree. For example, the top state Program Areas are Universe Identification, Waste Activity Monitoring, Handler Monitoring and Assistance, and Risk Based Decision Support. The first three Program Areas are subsets of the first EPA Program Area, *Program Implementation*. The fourth state Program Area (Risk Based Decision Support) corresponds with the fifth EPA Program Area, *Studies and Research*.

6.3.2 Detailed Analyses of Priority Determinations for the Seven Program Areas

This section presents the detailed analyses that led to the conclusions described in the preceding section.

Program Implementation **(Ranking: 1)**

Activities include the following: identify universe of regulated entities, implement corrective action, implement permitting program, implement waste minimization program, monitor waste management activity, and implement compliance monitoring and enforcement.

Groupings of information needs include the following: stakeholder, geographic location, handler, waste management activity, corrective action, site characteristics, permit activity, compliance activity, and enforcement activity.

Strategic Importance -- High

Program Implementation is extremely important because the activities represent EPA, state, and tribal efforts to ensure the safe management of hazardous waste to protect public health and the environment, which is central to the mission of the EPA hazardous waste program. This Program Area generates most of the information used by EPA headquarters and regions to evaluate the progress and effectiveness of the Agency and the delegated RCRA program. Based on the evaluation of the program, EPA can identify and implement program improvements that are integral components of *Program Development*. *Program Implementation* also provides information for program staff to use when determining the type of technical assistance and outreach needed by states and the regulated community (*Program Implementation Support*).

Strategic Importance of *Program Implementation*

- **Executive View:** *EPA continues re-invention and streamlining activities for the existing program and makes it simpler and less burdensome for facilities to show compliance with environmental regulations and other performance standards; EPA's program activities will need to be integrated with EPA's multi-media approaches to environmental protection; and the EPA hazardous waste program will be incorporating more risk-based decision-making into all program development, implementation, and evaluation activities.*
- **Goals:** *RCRA is protective of human health and focuses more on results than the process; EPA maintains effective and efficient partnerships with stakeholders; The RCRA program integrates into a multi-media environmental protection approach, and RCRA promotes source reduction and waste minimization.*
- **Strategies:** *Program Improvement and Risk-Based Decision Making.*

The analysis of *Program Implementation* focuses in part on information management issues pertaining to the Biennial Reporting System, Hazardous Waste Manifest, and Notification. These information systems are the subjects of short-term projects currently underway -- either in an analysis phase or as a result of recent proposals for reducing reporting burdens.

Program Implementation contains a number of critical policy issues related to the role of EPA and the corresponding issue of generating and reporting facility-specific data. These critical policy issues must be addressed during the Program Area analysis phase (see Chapter 7). Attaining the goal of effective, efficient, and fully delegated state and tribal programs will take time. During this transition phase, EPA (primarily the regions) will continue to be involved *in Program Implementation* activities. It is important to recognize that this Program Area generates some information used to evaluate the program. Moreover, other EPA Program Areas must access facility-specific information periodically to support the activities associated with their functions. Therefore, this Program Area continues to be of high strategic importance.

Current Systems Support -- Medium to Low

Current Systems Support for *Program Implementation*

Need for Improvement: *The key gap in current systems support for program implementation is the lack of information supporting multi-media, industry sector, and location-based evaluation of hazardous waste activity.*

Reliability of information from sources = Medium
Accessibility of information from sources = Medium/Low

Historically, EPA relied upon facility specific program implementation information to describe hazardous waste program status, the regulated community, and hazardous waste activity. The key gap in current systems support for *Program Implementation* is the lack of information supporting multi-media, industry sector, and location-based evaluation of hazardous waste activity. In addition, while EPA currently is maintaining systems containing facility-specific information, this information can be made more accessible to users, and data quality could be improved. The current program implementation systems were designed to maintain a history of regulated activity for each hazardous waste handler. While EPA's initial analysis found a continuing demand for facility-specific information, the shift in systems support direction will be increasingly to support program analysis and evaluation based on industry sectors and geographic locations.

To effectively support analysis based on location and address multi-media environmental concerns, EPA and the states must develop consistent methods for linking information about hazardous facilities with other location-based information sources. To effectively support industry sector analysis, EPA and the states must develop consistent methods for classifying regulated businesses or for linking facility information to other sources of information on business demographics. A major challenge in this Program Area analysis project will be to identify the shared implementation information that is needed to support national program evaluation and the level of detail and update requirements.

(Ranking: Tied for 2)

Activities include the following: establish national environmental baseline and goals, establish environmental performance measurements, establish program performance measurements, evaluate environmental progress, conduct audit of headquarters, regional, and state programs, evaluate performance of headquarters, regional, and state program activities, and identify program improvements.

Groupings of information needs include the following: environmental performance measurements, program evaluation, and program performance measurement.

Strategic Importance -- High

Strategic Importance of *Program Evaluation*

- **Executive View:** *EPA is changing from command and control regulatory activities to providing more flexibility in achieving environmental protection, including expanded use of voluntary actions and initiatives; EPA continues reinvention and streamlining activities for the existing program and makes it simpler and less burdensome for facilities to show compliance with environmental regulations and other performance standards; and RCRA will place less emphasis on program activities and more emphasis on environmental results to measure program success.*
- **Goals:** *RCRA is protective of human health and the environment and focuses more on results than process;* and *hazardous waste program's effectiveness in protecting human health and the environment can be measured and demonstrated.*
- **Strategies:** *Program improvements, program measurement and evaluation, and information dissemination.*

Program Evaluation is central to achieving the future vision of the EPA hazardous waste program, as expressed in the evolving OSW Strategic Plan. *Program Evaluation* is highly interdependent with *Program Implementation,* which generates information used for measurement and evaluation. This Program Area includes the development of measurements that can be used to assess the overall progress of the RCRA program in protecting human health and the environment. There are two types of measurement and evaluation activities: 1) the traditional approach of measuring the performance of state, tribal, and regions based on program activities and 2) the increasingly important approach of developing more direct and meaningful indicators that measure actual environmental improvements. The activities in *Program Evaluation* work toward ensuring that RCRA is protective of human health and the environment and results can be measured and demonstrated. The activities also address disseminating hazardous waste program information to the public and regulated community and meeting the requirements of GPRA. As such, the activities in *Program Evaluation* will create information used in *Program Management* and *Program Development*.

Program Evaluation also incorporates a number of areas raised in executive interviews on program direction. They emphasize moving away from direct implementation and command and control programs to more flexible approaches. As information managment requirements are specified from GPRA and NEPPS, these requirements will be incorporated into this Program Area. The focus is moving toward end results and reinventing programs to enable states and the regulated community to implement environmental protection and show compliance more efficiently. The information generated in this Program Area allows EPA to shape the scope and depth of its evaluation role and its relationship with stakeholders.

Current Systems Support -- Medium to Low

Current Systems Support for *Program Evaluation*

Need for Improvement: *The current systems maintain information designed to track the regulatory process and regulated waste activity, not the environmental results of those activities.*

Reliability of information from sources = Medium/Low Accessibility of information from sources = Low

The key information gap for *Program Evaluation* is a lack of supporting information to evaluate environmental results. Current information is designed to track the regulatory process and regulated waste activity, not the environmental or human health results of those activities. While EPA appears to have a continued need for information about regulatory process and regulated waste activity, the focus must be on directly collecting information related to environmental results plus linking information about program activity to the information that quantifies the environmental and human health outcomes of those activities. In addition, the field of program evaluation is expanding. Measurements under GPRA, environmental indicators and goals, are still being developed. These measures may require new types of information regarding environmental status that we currently do not collect. There will be a large gap between information available today and that which will be needed to meet these growing needs. A future challenge in this Program Area will be to identify the intended environmental outcomes for the many hazardous waste program activities.

(Ranking: Tied for 2)

Activities include the following: provide access to program information, assess program technology needs, develop mechanisms for information collection, integrate information, provide mechanisms for disseminating information, implement data security mechanisms, and maintain catalog of information definitions.

Groupings of information needs include the following: information technologies.

Strategic Importance -- High

Information sharing is highly interdependent with all other Program Areas in terms of information management. The activities include the integration and dissemination of data and information. The information management activities provide the mechanics for receiving and disseminating information among all other Program Areas.

Strategic Importance of *Information Sharing*

- **Executive View:** *Information must be made available and explained to the public to promote local stakeholder participation; hazardous waste information must be integrated with EPA information systems as well as other outside information systems to support multi-media activities; hazardous waste program information must be made available to analysts, less resource intensive to maintain, and of higher quality to support quality scientific and technical analyses; to ensure consistent implementation of the program, EPA must provide greater access to certain types of program information; to reduce unnecessary burden, EPA must strive to identify and maintain fundamental core information to support the program while minimizing the burden of collecting and maintaining RCRA information.*
- **Goals:** *EPA provides RCRA information that is accurate, accessible, easy to use, and useful.*
- **Strategies:** *Information dissemination and information gathering.*

Information Sharing focuses on the activities of transferring information among program stakeholders. Managers noted that information must get into the hands of stakeholders to promote more effective participation in environmental decision making, ensure consistent implementation of the program, and facilitate multi-media analyses. As noted during facilitated sessions, a number of the program staff concerns were related to the burdensome mechanics of inputting and accessing information in the EPA hazardous waste program. Addressing these difficulties would increase the usefulness of the information and ultimately the quality of the data. Hence, by improving activities in *Information Sharing*, one addresses the goal of making RCRA information more accurate, accessible, easy to use, and useful and satisfies the strategies associated with information dissemination and gathering.

Current Systems Support -- Medium to Low

The major gaps in the current systems that support *Information Sharing* are 1) the relative inaccessibility of current hazardous waste information and 2) a lack of support for integrating the volumes of hazardous waste information that currently exist in both formal databases and collections of text documents ranging from regulations, policy, and guidance to special studies and reports. Interviews revealed that most EPA analytical projects will continue to require the ad hoc integration of hazardous waste, scientific, demographic, and multi-media information obtained from diverse sources.

Access to hazardous waste information can be significantly improved using technologies that provide subject-based access to information in varied formats. Information integration is also improved by subject-based access technologies, but these must be supplemented with documentation that describes how information for a given subject can be integrated. The ongoing challenges for this Program Area will be to develop technologies supporting easy access to current and future hazardous waste information and to simplify integration of this information with scientific, demographic, and multi-media information.

Current Systems Support for *Information Sharing*

Need for Improvement: *The ongoing challenges for this Program Area will be to develop technologies supporting easy access to current and future hazardous waste information and to simplify its integration with scientific, demographic, and multi-media information sources.*

Reliability of information from sources = Medium
Accessibility of information from sources = Low

(Ranking: 3)

Activities include the following: develop regulations and develop non-regulatory approaches.

Groupings of information needs include the following: regulation and policy and guidance

Strategic Importance -- Medium

Program Development incorporates a number of elements key to the hazardous waste program. This Program Area includes the development of alternatives to regulatory and standards development, which were strategic goals noted for the EPA hazardous waste program. Through development of voluntary programs and multi-media approaches, this Program Area incorporates the goals of focusing RCRA on results versus process, integrating a multi-media environmental approach into the program, and promoting source reduction and waste minimization. This Program Area includes the activities necessary to make the program easier to implement, such as clarifying regulations to make them easier to understand and to improve compliance. *Program Development* addresses one of the major goals of the program – making RCRA easier to understand.

Strategic Importance of *Program Development*

- **Executive View:** *EPA's program activities will need to be integrated with EPA's multi-media approaches to environmental protection; and the EPA hazardous waste program will be incorporating more risk-based decision making into all program development, implementation, and evaluation activities.*
- **Goals:** *RCRA is protective of human health and the environment and focuses more on results than process; the RCRA program integrates a multi-media environmental protection approach; RCRA is easy to understand; and RCRA promotes source reduction and waste minimization.*
- **Strategies:** *Program improvements.*

The voluntary program development and multi-media activities also support the program improvement strategies emphasized by staff during the facilitated sessions. They also are consistent with the management viewpoint of the EPA hazardous waste program moving toward a multi-media and location approach to environmental protection, as well as incorporating risk-based decision making into program development activities.

In terms of information management, one key to this Program Area is having adequate and reliable data available upon which to base the technical and policy decisions inherent in every rulemaking and guidance development effort. Management and staff involved in rulemaking and guidance efforts are frequently confronted with inadequate data about the regulated community, and in some cases, the resulting regulations or guidance may not be as clear and appropriately targeted as possible. To meet the vision of an EPA hazardous waste program, adequate information must be available to accurately describe the characteristics of the regulated community and risks to the environment and human health. Such information is necessary whether developing regulatory or nonregulatory programs.

Current Systems Support – Medium

The major gap in current systems support for *Program Development* is that existing hazardous waste information does not effectively support multi-media and industry sector analysis.

Current Systems Support for *Program Development*

Need for Improvement: *The major improvements in information support for this Program Area will be achieved through increased accessibility to current hazardous waste information, enhanced support for multi-media and industry sector analysis, and enhanced methods for integrating this information with information from other sources.*

Reliability of information from sources = High/Medium Accessibility of information from sources = Medium/Low

The major improvements in information support for *Program Development* will be achieved through increased accessibility to current hazardous waste information, enhanced support for multi-media and industry sector analysis, and enhanced methods for integrating this information with information from other sources. These improvements will be largely addressed by the information access and integration projects pursued under the *Information Sharing, Program Evaluation*, and *Program Implementation*. To effectively evaluate and manage changes in the program (e.g., regulations, policy, guidance), this Program Area must consider integrated methods for maintaining a program wide view of the hazardous waste information requirements mandated by statutes, regulations, policy, and guidance.

Program Management (Ranking: 4)

Activities include the following: identify and prioritize national program areas; define EPA partnerships and stakeholder roles; conduct strategic planning; assess strategic information needs of the program; prioritize and track program resources; establish program direction; plan implementation programs and resources; authorize states/tribal programs; negotiate and track state grants; and establish performance partnerships.

Groupings of information needs include the following: program, program plan, program cost, and program resource.

Strategic Importance – Medium

The strategic importance of *Program Management* rests primarily on two areas. First, protecting human health and the environment is a key goal of this Program Area. Second, two of the activities—establishing stakeholder partnerships and authorizing stakeholder partnerships—highlight the concept of EPA-stakeholder partnerships. The partnership concept focuses on EPA and its stakeholders working together to take on the challenges of implementing the hazardous waste program. The activities in this Program Area address the goal of maintaining effective and efficient partnerships with stakeholders. The activities also reflect the strategies of implementing program improvements by improving stakeholder partnerships and making resources available through resource and fund management.

Strategic Importance of *Program Management*

- **Executive View:** *Integration of program management and information management.*
- **Goal:** *RCRA is protective of human health and the environment and focuses more on results than process; EPA maintains effective and efficient partnerships with stakeholders.*
- **Strategies:** *Program improvements* and *resource availability.*

Current Systems Support – Medium

Current systems support *Program Management* by providing baseline information about program implementation activities, regulatory processes, and regulated waste activities. *Program Management* relies upon the *Program*

Current Systems Support for *Program Management*

Need for Improvement: *The major gaps in current systems support for Program Management are a lack of information supporting multi-media and industry sector-based assessment of environmental results.*

Reliability of information from sources = Medium
Accessibility of information from sources =Medium

Evaluation activities to determine what has been accomplished and to define what needs to be accomplished. The major gap in current systems support for *Program Management* is the lack of information supporting multi-media and industry sector-based assessment of environmental results. A major challenge for this Program Area will be to identify the intended environmental outcomes for the many hazardous waste program activities and to develop methods for allocating program resources to achieve the desired environmental results.

(Ranking: 5)

Activities include the following: analyze industrial waste information; identify high-risk wastes; conduct waste management risk assessment; conduct waste characterization, waste management, and economic studies; conduct impact assessments; and develop methods and technologies.

Groupings of information needs include the following: method and technology, research, risk measurement, and waste.

Strategic Importance – Low

Studies and Research is interdependent with *Program Development* because it generates information needed to support many of the program development activities. The goal of basing RCRA on sound science originates in this Program Area. The activities in this Program Area depend on studies and research conducted to identify wastes and waste management practices of concern and the risks to human health and the environment that result from those waste management practices. Within this Program Area, it is essential to ensure availability of the research, science, technical, and modeling information needed to conduct studies that provide meaningful scientific and technical information (including risk) for the EPA hazardous waste program.

Strategic Importance of *Studies and Research*

- **Executive View:** *The EPA hazardous waste program will be incorporating more risk-based decision-making into all program development, implementation, and evaluation activities.*
- **Goal:** *RCRA Program is based on sound science.*
- **Strategies:** *Risk-based Decision Making and Program Improvement.*

The goal of sound science within the hazardous waste program is linked to risk-based decision making. This Program Area contains categories of strategies emphasizing risk-based decision making when developing programs and targeting decisions. The management view of the program includes the concept of incorporating risk-based decision making into all program

development and implementation activities, as well as management and budget decisions. *Studies and Research* generates the information needed to develop risk-based programs and make risk-based targeting decisions in other Program Areas. Activities in this Program Area specifically deal with studies and research aimed at identifying high risk wastes and waste management activities. Information generated as a result of this activity would support activities within *Program Development, Program Management, Program Evaluation*, and *Program Implementation*.

Current Systems Support – Medium to Low

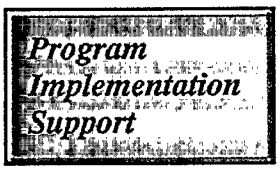
Current System Support for *Studies and Research*

Need for Improvement: *The primary weaknesses in current systems support for this Program Area are that current systems are difficult to access and that it is difficult to combine information obtained from current internal and external information sources.*

Reliability of information from sources = Medium
Accessibility of information from sources =Low

Hazardous waste studies and research support *Program Development* and *Program Management* by identifying the environmental risks associated with specific solid wastes and the methods used to manage these risks. This activity requires staff to combine information from a wide range of scientific, technical, and programmatic sources. The primary weaknesses in current systems support for this Program Area are that many current systems are difficult to access and that it is difficult to combine information obtained from current internal and external information sources.

Interviews of program staff responsible for *Studies and Research* indicated a high degree of confidence in information obtained from sources that organize information based on geographic location (GIS). This finding highlights the fact that physical location information provides one of the most effective tools for combining and organizing diverse information derived from many sources. Analysis for this Program Area must include consideration for how the results of individual studies and research can be integrated with information maintained in future hazardous waste program support systems. The requirement to support analysis based on physical location and industry sector must be addressed for each PAA. Successful implementation of this requirement will greatly improve EPA's ability to combine information from multiple sources.



(Ranking: 6)

Activities include the following: support other government activities on wastes; support legal defense of regulations, policy, and guidance; coordinate implementation approach; provide guidance, training, and technical assistance; solicit feedback; establish internal/external program communication; conduct stakeholder outreach activities; and respond to information requests.

Groupings of information needs include the following: stakeholder feedback, information request, training, and technical assistance.

Strategic Importance – Low

Strategic Importance of *Program Implementation Support*

- **Executive View:** *To ensure consistent implementation of the program, EPA must provide greater access to program information.*
- **Goal:** *EPA maintains effective and efficient partnerships with stakeholders.*
- **Strategies:** *Information dissemination and information gathering.*

This Program Area is highly interdependent with *Program Development* and *Program Implementation*. As the Agency moves out of the direct implementation role, the activities of this Program Area—training support, technical assistance, communication and outreach, handling of information requests, and managing stakeholder feedback—use the products of the *Program Development* and communicate them to the implementors of the program (states and the regulated community). The activities in this Program Area support the goal of maintaining effective and efficient partnerships with stakeholders.

The activities in this Program Area also address the strategies of improving information dissemination and information gathering with stakeholders. Making information about the RCRA program more available to the stakeholders will assist in understanding and implementing the program. Activities in *Program Implementation Support* also include collecting stakeholder feedback and collecting information requests to assist stakeholders in understanding the program and improving implementation and compliance. These strategies also reinforce the executive view that EPA must make program activity information (e.g., regulatory interpretations, proposed rulemakings) more available to ensure consistent implementation of the EPA hazardous waste program.

Current Systems Support – Medium

Current Systems Support for *Program Implementation Support*

Need for Improvement: *The challenges for this Program Area will be determining what information about stakeholder lists must be maintained, developing a process for maintaining those lists, and identifying methods for making those lists accessible to EPA staff based on stakeholder environmental interests.*

Reliability of information from sources = Medium
Accessibility of information from sources =Medium

The key information requirements for this Program Area are information that identifies the roles and responsibilities of stakeholders and information that identifies the training and technical assistance requirements for those stakeholders. With the exception of regulated stakeholders, these requirements are not currently supported by automated information systems. Rather, program staff indicated that they rely on stakeholder lists maintained individually or within their organizational niche. These lists are usually developed and maintained for specific or ongoing projects. While most staff thought their stakeholder lists were accessible and of high quality, there are many weaknesses inherent in isolated list management.

The primary weakness in current stakeholder list management is inconsistency. Because the stakeholder lists are individually maintained, they are not easily accessible and cannot be managed to reflect contact changes in stakeholder organizations. Staff from different EPA organizations end up communicating with different stakeholder representatives regarding the same or related subjects. Perhaps most important, there is no centralized or uniform process allowing stakeholders to identify or update information about who will represent them for a given subject, and EPA has no way of distributing such representational changes when they occur. The challenges for this Program Area will be determining what stakeholder lists must be maintained, developing a process for maintaining those lists, and identifying methods for making those lists accessible to EPA staff based on stakeholder environmental interests.

6.3.3 Evaluation of Program Areas and Identification of Short-Term Projects in Light of Internal and External Factors Influencing the RCRA Program

In addition to evaluating the Program Areas on strategic importance and current systems support, EPA also examined the various external and internal Agency influences that could impact RCRA information management. These influences, listed and described in Exhibit 6-2, include the following:

- Key Identifier Initiative.
- One-stop Reporting Initiative.
- Public Access Committee.
- Burden Reduction Initiative.
- Project XL and CSI Proposals.

- GPRA.
- Manifest IG Audit and ICR Renewal/OMB Recommendations.
- BRS IG Audit and ICR Renewal/OMB Recommendations.
- Commitment to Investigate Notification Reinvention.
- TRI Expansion.
- GAO Concerns about Waste Minimization (Source Reduction and Recycling) Information.
- Information Management Initiative/Reform Demand - ISO 14000 Environmental Management Standards.

In addition to these program drivers, EPA also must consider 1) Office of Administration and Resource Management's (OARM's) announced intention to move existing and future information systems to a new software platform (i.e., Oracle) and 2) the RCRA stakeholders' need to take the results of the RCRIS Lessons Learned Project into account when moving forward with any information management project (see Appendix I for the RCRIS Lessons Learned Briefing)[1].

Program Areas

EPA evaluated the Program Areas against these internal and external factors and found that the rankings identified in Section 6.3.1 do not change. Specifically, EPA determined that *Program Implementation* will continue to be a high priority because it contains the activities and information that center around the Key Identifier Initiative, the Burden Reduction Initiative, the Manifest IG Audit and ICR renewal, the BRS IG Audit and ICR renewal, Notification Reinvention, TRI expansion, and the GAO concerns about source reduction and recycling information. *Program Evaluation* and *Information Sharing* continue to be the second most important Program Areas. *Program Evaluation* will need to address key Agency program influences, including GPRA as well as support the current Project XL and CSI proposals. *Information Sharing,* on the other hand, is designed to work with and address recommendations from the Public Access Committee. It also targets one of the key recommendations of the RCRIS Lessons Learned Project: to make information more accessible. Thus, the priority determinations are viewed as consistent with the general themes and directions of EPA.

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[1]Initiated in December 1995, the RCRIS Lessons Learned Project was conducted in response to the GAO report published on RCRIS. The purpose of the project was to examine the systems development and implementation history of RCRIS, understand its accomplishments as well as its shortcomings, and identify what should and should not be done in future system development efforts for the RCRA program.

Information Management Initiative/Reform Demand	Concept for Inclusion into the Program Area Analysis (PAA) Methodology	Activities or Concerns that Need to Considered by PAA(s)	Program Area (PA) Affected
Facility Identification (Key Identifier) Initiative	Data system linkage; similar core facility information	FR Notice about concept with option in September 1996	Program Implementation
One-stop Reporting Initiative	Place-based, multi-media, consolidated reporting	Study initiated in September 1996 on data overlaps	Program Implementation
Public Access Committee (PAC)	Accessible and understandable information for public use	IRM ESC plans and meeting notes with stakeholders documenting issues; CEIS	All PAs
Burden Reduction Initiative	Burden reduction; calculation of burden with all PAA options and recommendations	Report developed in December 1995 but never released due to OMB concerns about baseline calculations	All PAs
Project XL and CSI Proposals	Ideas for piloting changes in information reporting by regulated community	Several project XLs are piloting streamlining concepts; metal finishing CSI will have information streamlining recommendations (RIITE Project)	All PAs
GPRA	Methodology for measuring environmental and health results.	Need to develop measurements	All PAs

Exhibit 6-2. Overview of External and Internal Influences Affecting Information Management

Information Management Initiative/Reform Demand	Concept for Inclusion into the Program Area Analysis (PAA) Methodology	Activities or Concerns that Need to Considered by PAA(s)	Program Area (PA) Affected
Manifest IG Audit and ICR Renewal/OMB Recommendations	Information appropriate to need/less cost and more effective/ burden reduction	Final IG report documenting concerns/ recommendations; OMB concerns documented in Reg/Neg	Program Implementation
BRS IG Audit and ICR Renewal/OMB Recommendations	Information appropriate to need/less cost and more effective/ burden reduction		Program Implementation
Commitment to Investigate Notification Reinvention	Information appropriate to need/less cost and more effective/ burden reduction	Report on reinventing regulation, including commitment to consider reduction in notification burden	Program Implementation
TRI Expansion	Place-based, multi-media reporting	Proposal published in June 1996	Program Implementation
GAO Concerns about Waste Minimization (Source Reduction and Recycling) Information	Importance of source reduction and recycling measurement	GAO concerns documented in report; also, four state pilot studies and WMB measurement project	Program Implementation
Information Management Initiative/Reform - ISO 14000 environmental management standards	New industry approaches for implementing environmental management systems (i.e., environmental auditing and environmental performance evaluation) and pollution prevention activities	EPA standards network (OPPTS) serves as focal point for Agency-wide input to standards development; need to stay current with pilot projects and standards requirements	All PAAs

Exhibit 6-2. Overview of External and Internal Influences Affecting Information Management (continued)

Short -Term Projects

A number of short-term information-related projects will be or have been initiated in response to these program influences. Although some short-term projects do not represent RCRA community-wide efforts, these projects provide certain interim solutions until the longer-term PAAs are conducted and resulting system improvements are implemented. While these short-term projects did not originate in direct response to this ISP, they were identified as supporting the Program Areas in this ISP. EPA analyzed these short-term projects to determine their scope and impact on the results of this ISP. In addition, EPA analyzed the resource requirements of the short-term projects to determine the impact of their implementation on the resources available for other WIN-related activities.

The outcomes of these short-term projects may have a direct impact on the follow up PAAs soon to be conducted for the top three Program Areas. Note that the follow up PAAs are essentially detailed system requirements analyses and will have a longer time for completion than some of the short-term projects. (Chapter 7 discusses in more detail the process for conducting the PAAs.) Moreover, all of the short-term projects support one of EPA's top three Program Areas. Hence, the outcomes of the short-term projects will have an impact on the results of the PAAs and vice versa.

Exhibit 6-3 lists the short-term, information-related projects EPA evaluated to determine the potential impacts on and relation to the Program Areas, particularly the top three. Based on the Agency program influences, the following short-term projects are recommended as priorities for OSW for FY 1997 and FY 1998:

1. BRS Changes - supports *Program Implementation*.

2. RCRA Policy Index System - supports *Information Sharing*.

3. Access to RCRIS/BRS National Data - supports *Information Sharing*.

4. RCRIS Streamlining - supports *Information Sharing*.

5. RCRA Docket Indexing Systems - supports *Information Sharing*.

6. Special Analyses - supports primarily *Program Implementation*.

The Enforcement Initiatives will be primarily conducted by the Office of Enforcement and Compliance Assistance. One should note that conducting the above projects has the potential to impact resources that would otherwise be devoted to PAAs. The probability and magnitude of such impacts is not currently known.

- BRS Changes - Implementing the 1997 biennial report changes (revise forms; hotline support for calls; develop, implement, and document software to support changes; and provide training to regions/states).

- RCRA Policy Index System - Define, design, develop, implement, and document a searchable database on the Internet, containing policy and guidance documents.

- Access to RCRIS/BRS National Data - Move the RCRIS and BRS to an Oracle database structure to shadow the existing Focus databases. This does not change current systems but allows EPA to make the RCRIS and BRS databases available on a platform that supports integrated query with other EPA national systems.

- Special Analysis - Respond to analysis requests on information projects; including TRI expansion proposal, RIITE, manifest initiatives, IG notification issues, GAO waste minimization issues, key ID, and XL reviews.

- Enforcement initiatives:

  -- Sector-Based Tracking: The sector divisions in the Office of Compliance will identify patterns of noncompliance within specific economic sectors (industrial groups) and devise appropriate compliance assurance and enforcement strategies to correct violations.

  -- Enforcement Sensitive Definition: OECA has been redefining what is releasable under FOIA. The biggest implications are on RCRIS -- more data will be releasable than was previously allowed, more than from any other data base.

  -- Compliance Assistance: The Sector Divisions in the Office of Compliance will develop programs that help to organize and better explain different environmental requirements that affect the same industry. As a first, the Office of Compliance is developing "compliance assistance centers" to help those small business sectors with significant regulatory requirements.

- RCRIS Streamlining - Support OSW's effort to minimize state and regional requirements to submit certain information to the national oversight databases.

- RCRA Docket Indexing System - Support OARM in conducting a feasibility study that determines the type and scope of a database index that would serve the needs of the docket and its users.

Exhibit 6-3. List of Short-Term Projects to Support the EPA Hazardous Waste Program

7.0 TRANSITION PLAN

This chapter describes a transition plan to implement the findings of this ISP and to address EPA's information management requirements. Based on recommendations from Chapter 6, the transition plan recommends priorities for FY 1997 and FY 1998, including resources needed, schedules, and outputs/outcomes for the Program Area Analyses and priority short-term projects. This chapter also identifies key principles that EPA believes each PAA and short-term project must address and incorporate into any subsequent planning and design activities. In addition, this chapter describes a framework and issues for successful EPA/state coordination.

This chapter addresses the following areas:

- Key questions answered by this chapter.
- Key findings identified through development of the transition plan.
- Discussion of the relevant topics, including the implementation process of the transition plan in terms of key programmatic principles that must be addressed by each PAA and short-term project, a recommended framework for close EPA/state coordination, the methodology for conducting the PAAs, and proposed projects in terms of both PAAs and priority short-term projects.
- A discussion of other issues that should be addressed by EPA and/or states.

7.1 KEY QUESTIONS

What is EPA's proposed PAA transition plan, including projects, resources, schedules, and outputs/outcomes?

What are the key principles to consider in conducting the PAAs and short-term projects?

What are the issues concerning the successful coordination of EPA (both headquarters and regions) and state PAAs and what is the appropriate framework for resolving these issues?

7.2 KEY FINDINGS

- EPA will not be able to accomplish all of the many short- and long-term information management needs in the next 2 fiscal years. Consequently, priorities must be established and sufficient resources must be committed for both the short- and long-term phases of implementing this ISP and pursuing the overall WIN Initiative. However, all of the short- and long-term initiatives will be pursued, either on a high-priority track or as part of PAA efforts.

- *Program Implementation, Program Evaluation* and *Information Sharing* -- the three EPA priority Program Areas selected for detailed PAAs (the next step in the WIN project) -- can be initiated and completed in the next 2 to 3 years within realistic resource scenarios (provided an appropriate issue resolution framework is also established).

- All PAAs and short-term projects must address certain key principles to ensure consistent and coordinated movement toward improved RCRA information systems.

- The nine priority short-term projects identified in the transition plan probably can be continued within realistic resource scenarios. However, if additional short-term projects are imposed outside the boundaries of the PAAs, such projects are likely to have a direct negative impact on the number and pace of the PAAs.

- Immediate initiation of certain short-term projects could lose the benefits associated with the comprehensive approach of PAA project analysis and design. When short-term projects are initiated in this manner, the risks can, however, be minimized if they follow all the key principles and are coordinated with PAAs to the maximum extent possible.

- Successful PAAs and short-term projects will require all EPA organizations (i.e., OSW, OECA, and regions) to make the necessary long-term commitment of personnel – both management and staff – and sufficient extramural resources.

- To leverage resources and ensure successful integration of interrelated program areas, EPA, states and others (including tribes as feasible) must establish effective partnerships and adopt a shared vision for implementation of PAAs. An EPA/state steering committee should serve as the principal mechanism for ensuring these outcomes.

- Resource requirements for the top three priority PAAs are presented as *preliminary estimates*. The degree of coordination with states will have a significant impact on the resources actually required. In addition, existing short-term projects and any new short-terms projects will affect resource requirements.

- EPA must continue to support existing information systems (e.g., RCRIS) during the transition, while maintaining an appropriate level of awareness of information technology trends when contemplating interim improvements to RCRIS.

7.3 DISCUSSION

7.3.1 Implementation Process

This section describes the implementation process for EPA's PAAs and short-term projects in terms of six key principles that are critical for success and a framework for close state/EPA coordination.

Key Principles

In the many interviews, focus groups, and discussions conducted while preparing this ISP, stakeholders identified a number of issues that were regarded with sufficient significance to warrant special consideration in the PAAs and short-term projects. EPA refined these issues into six key principles, which are identified and briefly described in the paragraphs below.

Core Information Needs/Burden Reduction. *Core information needs must be identified, and reporting and record-keeping burdens should be reduced wherever possible in response to reinvention efforts for environmental regulation.* A major EPA commitment is to streamline unnecessary reporting requirements and reduce the record keeping and reporting burden on the regulated community. However, as noted in Chapters 2 and 3, the information needs of program staff do not appear to be significantly decreasing. In addition, new information needs will continue to be identified in the area of program evaluation. To achieve the desired reduction in the record keeping and reporting burden, priority and core information needs should be identified. Tough choices and determinations regarding the relative importance of supporting information may have to be made across various program activities. To facilitate this, the PAAs should be shared and understood by both EPA and the states. This will better foster elucidation of the core information that the RCRA program will require, at a minimum, to function.

Consistent Definitions. *Program and information system definitions must be more consistent to promote integration and utility of data.* Under RCRA's statutory scheme, state program requirements and associated definitions do not have to be identical to the EPA's. However, these inconsistencies in program definitions have continued to plague national data systems, including RCRIS and BRS. The inconsistencies have resulted in increased confusion and

difficulties in entering and checking data, as well as in programmatic use of the data. Program differences in definitions should be resolved in a manner that promotes integration, while allowing the needs or characteristics of individual programs (both federal and state) to be maintained where feasible.

During the PAAs, it will be crucial to identify elements with definitional variances, and where possible, to develop common definitions and consistent interpretations prior to developing information systems. The development of this common understanding of terms will require coordination among existing regulatory definitions and consultations with program experts across all affected programs at both the federal, state, and tribal levels.

Co-regulation/Partnership Framework. *All work on PAAs must recognize and accommodate the various roles of EPA, states, and tribes in reaching solutions to information collection, integration, and dissemination issues, especially to the degree that EPA continues to perform some level of program implementation.* The hazardous waste program is implemented through a partnership between EPA and state (and in some cases tribal) programs. States, in particular, are responsible for implementing the portions of the hazardous waste program for which they are authorized. At an individual facility, EPA and a state or tribe may have full or partial jurisdiction for implementing separate components of the hazardous waste program (e.g., permitting and corrective action). Consequently, both EPA and a state or tribe may be creating/managing similar information for a single facility. This situation raises the issue of how and where certain information is best managed, at the state/tribal or national level.

The PAAs should resolve the issue of co-regulation (EPA/state/tribal roles, responsibilities, information sharing) prior to any system design efforts. EPA and states must investigate the varying demands for information in the Program Areas from all implementors of the hazardous waste program. The analysis should identify a number of items, including the specific needs of each organization. Where needs conflict, the analysis should indicate how and where information will be managed to accommodate the varying needs, but to avoid the pitfalls of non-integrated information systems.

Information Accessibility. *Information must be readily available, easy to maintain, and of high quality for use by EPA, states, tribes, and the public.* EPA's role is evolving from direct implementor to working partner with RCRA stakeholders (i.e., states, tribes, industry, and the public). Through the ISP process, it is clear that all stakeholders require increased accessibility to information. For example, information systems must provide local communities with essential data in a user-friendly format to support community-based environmental protection

projects. The PAAs therefore, should address the issue of accessibility and identify opportunities (e.g., structural and technological) for improving the accessibility of information at all levels.

Multi-media Focus. *Hazardous waste information must be integrated with other Agency and non-Agency information systems to support multi-media and other Agency initiatives*. There is a clear shift in EPA programs toward multi-media emphasis and the concomitant need to integrate several databases and information systems to analyze cross-media impacts and implications. For example, the Agency is developing multi-media performance measures to demonstrate success rather than more traditional program-specific activity measures. In addition, community-based environmental protection initiatives require multi-media information. The PAAs should therefore identify information of importance to multi-media projects as well as develop options for meeting these needs.

Technology Assessment. *As PAAs and short-term projects are initiated, EPA must evaluate technologies carefully so that they meet user requirements and can be realistically implemented by the program stakeholders*. EPA noted that it will be important for the PAAs and short-term projects to apply the guiding principles on technology, as discussed in Chapter 5. This theme was highlighted during the RCRIS Lessons Learned project, which stated that future system development efforts must carefully examine the technologies and select ones that are stable and adequately address the information requirements of the users. As PAAs and short-term projects are conducted, EPA should begin examining technologies, particularly as project participants get closer to identifying the exact data and activities that need to be tracked. It will be important to evaluate the technologies based on a set of assessment criteria that reflect the user requirements for collecting, integrating, and disseminating information. A thorough technology assessment will help minimize the selection of a technology solution or set of solutions that are not appropriate to address the information management requirements of the PAAs.

State/EPA Partnership

The states and EPA agree that the INFORMED and WIN initiatives cannot achieve their objectives unless both partners (and tribes as feasible) work together to resolve issues, identify needs, and recommend solutions. There are some issues (e.g., what are the core data elements of a certain Program Area) that can be resolved during the PAAs. Other issues -- core information needs/burden reduction, consistent definitions, and co-regulation/partnership framework -- cut across some or all of the Program Areas. The process likely will operate more efficiently if these issues are resolved prior to, or at least in an appropriate timeframe with respect to, initiation of any PAA.

Both INFORMED and WIN are long-term solutions to the RCRA program's data needs. All partners must seek and make long-term commitments, both in time and resources, to make these efforts succeed. EPA and the states need to establish principles for how tasks will be accomplished, when tasks will be accomplished, and how the partners will work together early in the transition phase from ISP development to the PAAs. To the extent feasible, consistency across PAAs will move the process faster and help avoid revisiting issues. All partners need to work together to fully scope out the joint Program Areas and to develop project management plans that clearly identify major milestones, deadlines, and roles.

The coordination structure established for development of the ISPs -- executive steering committee, ISP steering committee, and various working groups -- may not have resulted in maximum clarity for defining roles and responsibilities or worked as efficiently as possible. Additional complexities during the PAAs (e.g., cross-PAA issues) support a more streamlined and efficient organizational approach. One option is to have State/EPA Work Teams, a PAA Coordinating Committee, and an Executive Steering Committee with the following responsibilities:

- **State/EPA Work Teams:** These Teams would consist of the analysts and information specialists conducting the PAAs and would be responsible for routine communication and coordination. While the Teams would make recommendations on all aspects of the PAAs, decision-making authority would be limited to how the work is accomplished.

- **PAA Coordinating Committee:** The Coordinating Committee would include one staff member from each ongoing PAA (or one state staff member and one EPA staff member from each ongoing PAA), two EPA headquarters managers, two EPA regional managers, and two state managers. The Coordinating Committee would be responsible for resolving any issues raised by the Work Teams and overseeing resource allocations. The Committee would have first-level decision-making authority and would bring any issue on which they could not reach consensus to the Executive Steering Committee.

- **Executive Steering Committee:** The Executive Steering Committee would include two upper management-level representatives each from EPA headquarters, EPA regions, and the states. The Executive Steering Committee would be responsible for resolving any issues raised to it by the PAA Coordinating Committee and would have overall decision-making authority.

7.3.2 PAA Methodology

The following discussion provides an overview of the PAA methodology. The intent is not to present a detailed description of the process, but to provide a general understanding of the elements of a PAA with respect to the resource discussions given in Section 7.3.3.

Key Steps

PAA involves five key steps: scoping a PAA, activity analysis, data analysis, interaction analysis, and confirmation. Each of these steps, including its purpose and key outputs, is briefly described below.

Scoping a PAA. The first step of a PAA is to identify key stakeholders and decision makers, determine the scope of the Program Area, identify anticipated outcomes and products from the analysis, select techniques for involving participants (e.g., interviews, facilitated sessions), identify key decisions, if any, that have been made (e.g., definitions), list key principles that need to be addressed, select team members, and determine time commitments. The project leader should develop the project management plan during this step and provide team members with background documents (e.g., the ISP) to ensure all team members have an indepth knowledge of project scope, background, and objectives. In scoping the Program Area, the project leader would also identify where potential activities or information needs may overlap with other PAAs and how such overlaps will be resolved during the analyses. The Project Managment Plan, developed in the initial phase of scoping, will address the overlap issues.

Activity Analysis. During this step, team members work with staff in the Program Area to refine the high level activity categories identified in the ISP and determine specific sub-activities within those categories. For example, the high level activity "permitting" is divided into a series of sub-activities, such as reviewing the permit application, providing comments to the permittee, and setting up a public hearing. By identifying a complete and accurate list of activities and subactivities, the team prepares for the next step of data analysis. Also, as part of this activity analysis, process improvements are identified that would result in changes in how the Program Area is implemented and data managed.

Data Analysis. The third step, data analysis, defines the data elements needed to perform the tasks identified in the second step. During this step, team members also identify clarifying characteristics of the activities and associated data element needs. For example, the high level information category of "program operations, plans, and evaluation information – environmental indicators" is broken down into a series of specific data elements, such as measurement of toxic levels in the environment. Team members would work with permitting staff to answer such questions as the following: Does EPA or the states issue a handler one or more permits? Do EPA and the states need to know only about RCRA permits, or do permitting staff need to know about other media permits? Identifying a complete and accurate list of data element needs will provide the basis for identifying core data needs. This step will result in a complete list of data elements, identification of core data elements, and

determination of the relationships among data elements. As part of this step, the team members also work with program staff to identify the data essential to supporting the activities of a Program Area.

Interaction Analysis. The fourth step in a PAA uses the results of the data analysis step to determine how the Program Area activities and data element needs interrelate. Team members would answer a number of key questions, such as the following. Which enforcement activities create and use specific data elements? Which events trigger an inspection? What data does an inspector need to conduct an inspection? The interaction analysis step has several functions. First, it provides an additional verification point to ensure all activities and all data element needs have been identified. Second, it determines which activities and which data elements interrelate so that the impact of any changes in the activities or data elements are understood. Third, it identifies activities, data elements, or decisions within one Program Area that may affect another Program Area. Finally, this step also includes a refinement of the Current Systems Assessment to determine how data elements are managed and how well the data management systems are meeting user expectations.

PAA Confirmation. In this final step, the results of the preceding analyses are presented to management and key decision makers. At this point, managers and key decision makers are asked to confirm that the list of activities and data elements needs are complete and accurate and to determine whether these data element needs are truly the core information needs for the Program Area.

Final Output. The PAA drives the findings of the ISP down to the data element level and results in the systems specifications for the next phase (design of systems). The systems specifications include a list of core data elements, definitions of the core data elements, and identification of accessibility, reliability, and frequency needs for the data elements.

7.3.3 Proposed Projects

This section presents the transition plan for the three priority PAA projects selected by EPA and the short-term projects that have or will be initiated in the near future. EPA considered other options for the transition plan. The Agency could, for example, perform additional/fewer PAAs or additional/fewer short-term projects. The transition plan, presented in Exhibit 7-1 and Exhibit 7-2, reflects the Agency's attempt to strike the optimum balance between resource and time constraints versus the necessity for meaningful progress on critical short-term and long-term improvements to EPA's information management systems. An expansion of the list of PAAs and short-term projects would require additional resources and additional commitments from regions, states, and other participants. Unanticipated and severe budget constraints could also impact progress on priority PAAs or short-term projects.

Proposed PAA Projects

Using the process described in Chapter 6 of this report, EPA selected three PAAs for initiation in FY 97: *Program Implementation, Program Evaluation,* and *Information Sharing.* Exhibit 7-1 provides an overview of the transition plan for these PAA projects and EPA's participation in priority PAA projects at the state level (i.e., Universe Identification, Waste Activity Monitoring, and Handler Monitoring and Assistance). The transition plan considers current and anticipated resource constraints. The next paragraphs discuss the three EPA PAAs from scope and resource perspectives.

Program Implementation overlaps with three state priority Program Area projects (Universe Identification, Waste Activity Monitoring, and Handler Monitoring and Assistance) identified by the states in their INFORMED ISP. In addition, this Program Area covers the analysis and streamlining of the data elements and the processing of manifests, notifications, and biennial reports. The analytical model used for the WIN ISP (i.e., IEM) recommends three to four full-time staff for each PAA, as well as several Program Area staff as needed. Although the IEM suggests that most PAAs take no longer than 6 to 9 months, the scope and complexity of this Program Area could require 18 to 24 months for complete analysis and final approval. It is estimated preliminarily that approximately $600,000 to $1,000,000 over 2 years in EPA extramural funds will be required, assuming that state efforts will supplement EPA projects. With the dedication of additional full-time equivalents (FTEs), as well as additional extramural support, this schedule could be shortened.

Program Evaluation focuses on two main areas, EPA/state partnerships and program and performance evaluations. *Program Evaluation* will interact with the National Environmental Performance Partnerships System (NEPPS) process as well as RCRA GPRA activities, and the analysis must integrate results from both areas. The evolving nature of *Program Evaluation* and the need to interact with two major, ongoing initiatives will add to the time and FTEs required for planning, coordination, consensus building, and identifying the measures and program/performance evaluation methodologies developed through NEPPS and GPRA efforts. It is assumed that the preliminary recommended $500,000 to $1,000,000 over 2 years in extramural funds will be supplemented by related ongoing activities (e.g., waste minimization measurement project). It may be possible to abbreviate the schedule with the dedication of additional FTEs, as well as additional extramural support. Because measures and evaluation methodologies are just now being developed, it is expected that the activities within *Program Evaluation* will still be expanding beyond the analysis period.

Information Sharing covers assessing technologies, including those that facilitate easy access and dissemination, and developing and implementing techniques for data collection, integration, and dissemination. Since *Information Sharing* supports the other six Program Areas, this analysis will be ongoing until all PAAs are complete. A specific schedule cannot be determined until schedules for the other six Program Areas are finalized. While the FTEs required for *Information Sharing* are slightly less than those required under the other two

priority Program Areas, the *Information Sharing* FTEs must be dedicated for a much longer period. The preliminary recommended $400,000 to $800,000 over 2 years in extramural funds will be supplemented by funds provided for the information-related, priority short-term projects.

Priority Short-Term Projects

Using the process described in Chapter 6 of this report, EPA identified nine short-term projects for initiation in FY 96, FY 97, and FY 98. OSW identified the following projects: Biennial Report (BR) and Biennial Report System (BRS) Changes, RCRA Policy Index System, RCRIS Streamlining, Access to RCRIS/BRS National Data, RCRA Docket Indexing System, and Special Analyses. OECA identified the following projects: Enforcement Sensitive Definitions, Sector-Based Tracking, and Compliance Assistance. Exhibit 7-2 provides an overview of the transition plan for these projects according to the resources required, schedule, and major outputs/outcomes. The transition plan considers current and anticipated resource constraints.

PROGRAM AREA	RESOURCES*	SCHEDULE	OUTPUTS/RESULTS
Program Implementation	4-6 Full Time Equivalents (FTEs) Includes Team Leader, Analyst, Information Specialist, Coordination and Logistics, and participation from several additional program area staff $300,000 - $500,000 in extramural funds per year for 2 years	18 to 24 months (depending on the process established)	Interim– project management plan, activity analysis, data analysis, interaction analysis; Final – specifications for next IEM phase (design)
Program Evaluation	4-6 FTEs Includes Team Leader, Analyst, Information Specialist, Coordination and Outreach, and participation from several additional program area staff $250,000 - $500,000 in extramural funds per year for 2 years	24 to 30 months	Interim – project management plan, activity analysis, data analysis, interaction analysis; Final – specifications for next IEM phase (design)
Information Sharing	2- 4 FTEs This estimate may increase based on other PAAs $200,000 to $400,000 in extramural funds per year for 2 years	Dependent on schedules for other PAAs	To be determined

Exhibit 7-1. Preliminary Estimates of Resources, Schedule, and Outputs/Outcomes of Recommended PAAs

PROGRAM AREA	RESOURCES*	SCHEDULE	OUTPUTS/RESULTS
State Projects: (a) Universe Identification (b) Waste Activity Monitoring and (c) Handler Monitoring and Assistance	1 - 3 FTEs for EPA participation in state projects See state INFORMED ISP for state funds per year $TBD in EPA funding for state projects	Preliminary state estimates: (a) 26 weeks (b) 38 weeks (c) 38 weeks	See state INFORMED ISP for outputs/results

Exhibit 7-1. Preliminary Estimates of Resources, Schedule, and Outputs/Outcomes of Recommended PAAs (continued)

* **NOTE:** The preliminary numbers given are estimates based on a general knowledge of the Program Areas and represent OSW HQ only. Once the Program Areas are fully developed, these estimates may change. The FTEs listed above are not fully loaded. In addition to the FTE estimates presented above, the Supervisory FTE for PAAs and coordination of PAAs is estimated at 1.5 FTEs. Overall coordination of WIN is estimated at 1 FTE. According to estimates, at least 24 person trips will be required over 2 years for *Program Implementation* and *Program Evaluation* PAAs.

SHORT-TERM PROJECTS	RESOURCES*	SCHEDULE	OUTPUTS/RESULTS
BR and BRS Changes - OSW	2 FTEs for FY 97 1 FTE for FY 98 $700,000 in extramural funds for FY 97 $200,000 in extramural funds for FY 98	To be determined	Revised forms; hotline support for calls; software developed, implemented, and documented; training provided for regions/states
RCRA Policy Index System - OSW	0.8 - 1 FTE $175,000 in extramural funds for FY 97	Complete by September 1997	Definition, design development, implementation, and documentation of a searchable index database to EPA hazardous waste program policy documents
RCRIS Streamlining - OSW	1 FTE $100,000 in extramural funds for FY 97	1997 RCRIS Releases	Simplified tracking of handler status information obtained from multiple sources (notification, Part A, inspection); continued improvement in national reports (i.e., permitting PARS); and modifications to support FY 1998/1999 national reporting requirements
Access to RCRIS/BRS National Data - OSW	0.5 FTE $200,000 in extramural funds for FY 97	FY 97	Develop shadow national databases in Oracle for RCRIS and BRS national oversight databases
RCRA Docket Indexing Systems - OSW	0.2 FTE $50,000 (initially) in extramural funds for FY 97	September 1997	Feasibility study that determines the type and scope of the database and index that would serve the needs of the docket and its users

SHORT-TERM PROJECTS	RESOURCES*	SCHEDULE	OUTPUTS/RESULTS

Exhibit 7-2 Preliminary Estimates of Resources, Schedule, and Outputs/Outcomes of Recommended Short-term Projects

Special Analyses - OSW	0.5 FTE $50,000 per year for 2 years	FY 97 FY 98	Technical documents identifying relationship and impact of Agency proposals or RCRA information needs and systems
Enforcement Sensitive Definitions - OECA	0.1 FTE	To be determined	To be determined
Sector-Based Tracking - OECA	5 FTE $150,000 in extramural funds for FY 97 $150,000 in extramural funds in FY 98	FY 97 and FY 98	Release of Sector Indexing Project in Spring 1997. Public response and comment through October 1997
Compliance Assistance - OECA	To be determined	FY 97	Five Compliance Centers to be opened in FY 97

Exhibit 7-2 Preliminary Estimates of Resources, Schedule, and Outputs/Outcomes of Recommended Short-term Projects (continued)

* **NOTE:** The preliminary figures given are estimates based on a general knowledge of the short-term projects. Once the projects are fully developed, these estimates may change. The FTEs in the exhibit are not fully loaded. An estimated 0.5 FTE will be required for the supervision of project performance and for coordination of OSW short-term projects. According to estimates, at least 4 person trips over one year will be required for OSW projects.

7.3.4 Issues to be Addressed by EPA and States

[Reserved pending outcome of further discussions with states]